GETTING STARTED

WITH DIGI 001

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PT LE v5.1.1 Serial Number:

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Getting Started with Digi 001

Version 5.1 for Macintosh and Windows 98/Me

Digidesign Inc.

3401-A Hillview Avenue
Palo Alto, CA 94304 USA
tel: 650·842·7900
fax: 650·842·7999

Technical Support (USA)
650·842·6699
650·856·4275

Product Information (USA)
650·842·6602
800·333·2137

Fax on Demand (USA)
1·888·USE·DIGI (873·3444)

International Offices
Visit the Digidesign Web site for contact information.

World Wide Web
www.digidesign.com

Digidesign FTP Site
ftp.digidesign.com

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DECLARATION OF CONFORMITY

We Digidesign,

3401-A Hillview Avenue

Palo Alto, California 94304-1348, USA

650-842-7900

declare under our sole responsibility that the product

Digi 001

complies with Part 15 of FCC Rules.

Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- Reorient or locate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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Digi 001

FC Tested To Comply With FCC Standards

FOR HOME OR OFFICE USE

Any modifications to the unit, unless expressly approved by Digidesign, could void the user's authority to operate the equipment.

Canadian Compliance Statement:

This Class B digital apparatus complies with Canadian ICES-003

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada

Australian Compliance

ACN 069 650 120

European Compliance

CE

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chapter 1

Digi 001 Introduction

About Digi 001

Thank you for purchasing Digi 001, a cross-platform solution for music, sound design, and multimedia production. The Digi 001 package includes the following:

- Installer CD-ROM containing Pro Tools LE recording software, RTAS (Real-Time AudioSuite) plug-ins, and online PDF guides
- *Digi 001 Getting Started Guide*, documents installation, configuration, and basic tutorials for Digi 001
- Digi 001 PCI Card, connects to the I/O Box and provides 8 channels of Optical I/O
- Digi 001 I/O Box with connections for analog audio, S/PDIF, and MIDI
- Rack ears, lets you install the I/O Box in a standard 19" rack
- I/O box connector cable, connects the Digi 001 PCI Card to the I/O Box
- Optical cable, connects the Digi 001 to an ADAT or S/PDIF audio device
- Digidesign Registration card

Pro Tools LE Capabilities

The Pro Tools LE software provides the following capabilities:

- Record and play up to 24 mono digital audio tracks (depending on your computer's capabilities)
- Record and play up to 128 MIDI tracks
- Use non-linear, random-access editing and mix automation
- Process audio with up to 5 RTAS plug-ins per track, limited only by your computer's capabilities
- Use up to 5 inserts and 5 sends per track
- Route up to 32 busses
- Work with 16-bit or 24-bit sessions

⚠ *Pro Tools LE uses your computer's CPU to mix and process audio tracks (host processing). Computers with faster clock speeds yield higher track counts and more plug-in processing.*

Digi 001 Capabilities

Digi 001 provides the following inputs and outputs:

- 8 analog audio inputs, 2 with mic preamps
- Switchable 48V phantom power on mic preamps
- 8 analog outputs and stereo monitor output
- Stereo headphone output
- Optical input for 8 channels of ADAT input or 2 channels of S/PDIF input
- Optical output for 8 channels of ADAT output or 2 channels of S/PDIF output
- 2 RCA channels of S/PDIF digital I/O
- MIDI in and out, providing up to 16 channels of MIDI I/O

In addition, Digi 001 includes a footswitch jack for punching in and out while recording.

System Requirements

Digi 001 can be used on a Power Macintosh or Intel computer.

To use Pro Tools LE on a Macintosh, you need:

- A Digidesign-qualified Power Macintosh (G4 recommended)
- Mac OS 9.0 or 9.1
- At least 128 MB RAM (192 recommended)
- CD-ROM drive for software install
- QuickTime 4.0 or later (included with Pro Tools LE)
- OMS 2.3.8 or later (included with Pro Tools LE)

To use Pro Tools LE on Windows, you need:

- A Digidesign-qualified Intel computer (PIII recommended)
- Windows Millennium Edition or Windows 98, Second Edition
- At least 256 MB RAM
- CD-ROM drive for software install

Compatibility Information

Digidesign can only assure compatibility and provide support for hardware and software it has tested and approved. For a list of Digidesign-qualified computers, operating systems, and third-party devices, refer to the latest compatibility information on the Digidesign Web site:

www.digidesign.com/compato/

Digidesign Registration

Complete and return the registration card included with Digi 001. Registered users are entitled to one year of free technical support, and will receive periodic software updates and upgrade notices.

About the Guides

This Quick Start Guide will get you started using Digi 001 to record, edit, and mix multiple audio and MIDI tracks. For additional information, see the following online guides:

- *Pro Tools Reference Guide*, documents in detail Pro Tools LE software
- *DigiRack Plug-Ins Guide*, documents how to use the RTAS and AudioSuite plug-ins included with Pro Tools LE
- *MIDI Control Surfaces Guide*, documents how to use MIDI control surfaces such as the Mackie HUI with Pro Tools LE
- *Keyboard Shortcuts* (Macintosh and Windows), lists keyboard shortcuts for Pro Tools LE

PDF versions of these guides are installed automatically with Pro Tools LE, and can be accessed from the Help menu in Pro Tools LE. To read the guides online, or print them, you must install Acrobat Reader (included on the Pro Tools LE Installer CD).

Conventions Used in This Guide

Digidesign guides use the following conventions to indicate menu choices and key commands:

Convention	Action
File > Save Session	Choose Save Session from the File menu
Control+N	While pressing the Control key, press the N key
Option-click	While pressing the Option key, click the mouse button
Right-click (Windows)	Click with the right mouse button

The following symbols are used to highlight important information:

User Tips are helpful hints for getting the most from your system.

Important Notices include information that could affect your data or the performance of your system.

Cross References point to related sections in other Digidesign guides.

Choose and Select

The words "choose" and "select" are often interchangeable in conversational english. In this guide, however, there is a distinction between the two terms.

Select When the guide instructs you to *select* something, it stays selected. This is the case with dialog box options and menu items that enable or disable an option.

Choose When the guide instructs you to *choose* something, a one-time action is performed. This is the case with most menu commands; they perform their chosen action only once.

chapter 2

Macintosh Configuration

Installing the Digi 001 Hardware

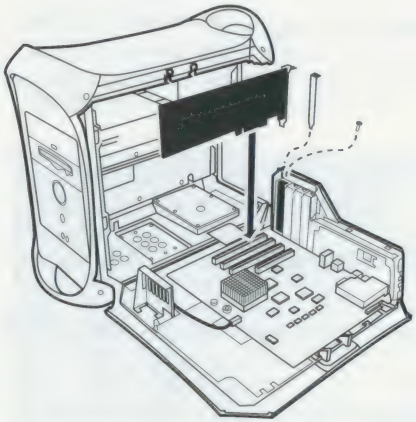
Before installing the Pro Tools LE software, first install the Digi 001 PCI Card.

To install the Digi 001 PCI Card in your Macintosh:

1 Turn off your computer. Leave it plugged in so that it is grounded.

2 Open the computer case. If necessary, refer to the manufacturer's instructions for details.

3 Remove the rear slot cover and screw of any available PCI expansion slot.



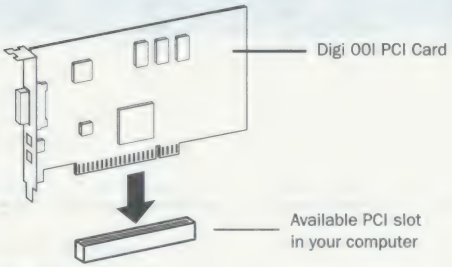
PCI card installation for Macintosh

4 Before handling the Digi 001 PCI Card, discharge any static electricity by touching the outer casing of the power supply.

5 Remove the Digi 001 PCI Card from its anti-static bag.

6 Hold the card gently by the top edges, and line up its PCI connector with the PCI slot inside the computer.

7 When the connector and slot are aligned, press the card into the slot using firm, even pressure. The card should click into place. Secure the card with the previously removed screw. Make sure the card's audio connectors are accessible through the rear slot of the computer.



PCI card installation

8 Close the computer case.

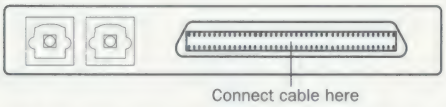
Connecting the Digi 001 I/O Box

⚠ *Your computer must be off when you connect or disconnect the I/O Box.*

To connect the Digi 001 I/O box:

1 Locate the connector cable with the wide ends that came with your Digi 001.

2 Align a cable end with the connector on the Digi 001 PCI Card, and insert the cable into the connector until it clicks into place.



Digi 001 PCI Card (outside computer view) showing cable connector

3 Align the other cable end with the Computer connector on the Digi 001 I/O Box, and insert the cable into the connector until it clicks into place.

4 Turn on your computer.

Installing the Pro Tools LE Software

Apple System Software Settings

To ensure optimum performance with the Pro Tools LE software, configure the Apple System software with the following settings.

To configure the Apple System software:

1 In the Memory Control Panel do the following:

- Set Virtual Memory to Off.
- Set the Ram Disk to Off.
- Set the Disk Cache to a Custom Setting of 512K.

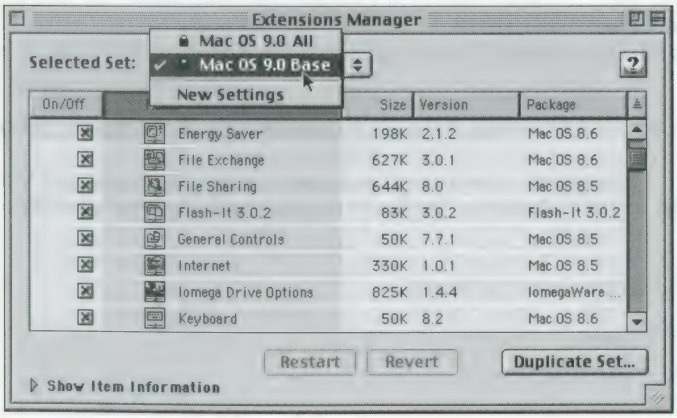
2 In the Energy Saver Control Panel, set the "inactive" time to Never.

3 In the Appearance Control Panel do the following:

- Click the Fonts tab and set the Large System Font to Chicago. In addition, deselect "Smooth all fonts on screen."
- Click the Sound tab and select None from the Sound Track pop-up menu.

4 Set the number of colors to thousands in the Monitors & Sound Control Panel. If you are using a Power Macintosh 9600, set the number of colors to 256.

5 In the Extensions Manager Control Panel do the following:



Extensions Manager Control Panel

- Choose Mac OS 9.0 Base (or Mac OS 9.1 Base) from the Selected Set pop-up menu.
- Click Restart to restart your computer.

Pro Tools LE Installation

After the Apple System software settings are configured, install Pro Tools LE.

To install Pro Tools LE on your Macintosh:

1 Insert the Pro Tools LE Installer CD in your CD-ROM drive. Locate and double-click "Install Pro Tools LE."

Install Pro Tools LE

2 At the Install window, select the install option for Pro Tools LE, and set the Install Location to your Startup hard drive. Click Install.

3 Follow the on-screen installation instructions.

4 When installation is complete, click Quit (not Restart) and install the demo sessions (see "Installing the Demo Session" on page 8) and OMS (see "Installing and Configuring OMS" on page 9).

Installing the Demo Session

The Digi 001 system includes two demo sessions, *Pro Tools SoundCheck Digi001*, which you can use to verify that your system is working, and *Be There Digi001*, a more full-featured demo that you can use to test system playback, and to learn some features of Pro Tools LE using the tutorial information in Chapter 5, "Working with the Demo Session."

⚠ *Before installing the demo sessions to your audio drive, make sure the drive is configured as described in "Hard Drive Requirements" on page 12.*

To install the demo sessions:

1 Insert the Pro Tools LE Installer CD in your CD-ROM drive. Locate and double-click "Install PT LE Demo Session."

2 At the Install Screen, make sure the install options for "Be There Session" and "SoundCheck Session" are selected.

3 Set the Install Location to your audio drive and click Install.

4 When installation is complete, click Quit.

Installing and Configuring OMS

(Macintosh Only)

To use Pro Tools on the Macintosh you must first install and configure the Open Music System (OMS). OMS, which is included on the Pro Tools Installer CD, has the following capabilities:

- Keeps track of which MIDI devices you are using, how they are connected, and which patches they are using
- Enables MIDI hardware to communicate with your music applications
- Provides timing services and inter-application communication

OMS stores a description of your MIDI studio in *Studio Setup* documents, which are edited in the *OMS Setup* application. Once OMS is configured, your music applications know which MIDI devices you are using by referencing the current Studio Setup document.

The following sections provide basic instructions for installing and configuring OMS. For more detailed information, refer to the online *OMS Guide* installed with Pro Tools.

Installing OMS

The OMS Installer is located on your Pro Tools Installer CD-ROM.

To install OMS:

1 Insert the Pro Tools Installer CD in your CD-ROM drive.

2 Open the "OMS Installer" folder and double-click the OMS installer.

3 At the Install window, select the Easy Install option, and set the Install Location to your Startup hard drive. Click Install.

4 Follow the on-screen installation instructions.

5 When the installation is complete, restart your Macintosh.

Configuring a New Studio Setup

(First-Time OMS Users Only)

Before configuring OMS, make sure the Digi 001 and I/O Box have been installed, and that any other MIDI interfaces are connected according to the manufacture's instructions and turned on.

To configure a New Studio Setup in OMS:

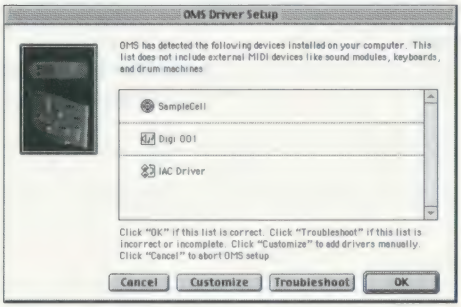
1 Launch the OMS Setup application. If OMS has not yet been configured, you'll be prompted to configure a New Studio Setup. Click OK.

2 Select whether your MIDI interface is connected to the Modem or Printer port. If using a USB or PCI-based MIDI interface (including the Digi 001), leave both ports unchecked. Click Search.

Ports for OMS Driver Search

OMS searches for and displays any detected MIDI interfaces, MIDI cards, and OMS drivers. If your interface is not detected, click Troubleshoot. Once your interface *is* detected, you are prompted to search for MIDI instruments connected to your interface.

3 Click OK to search for MIDI devices connected to your MIDI interface. To be detected, the device must be turned on with both of its MIDI ports connected to your MIDI interface.



OMS Driver Setup

OMS searches for and displays any detected MIDI devices. Some older instruments, as well as some newer ones, may not be recognized by the OMS auto-detection routines.

Undefined OMS device

Devices not recognized by OMS appear with a red question mark and are named based on the interface or port to which they are connected. These devices can be defined as necessary within the OMS Setup application (see "Defining MIDI Devices in OMS" on page 11).

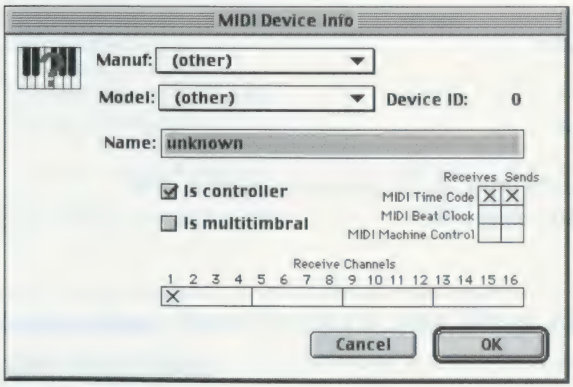
4 Click OK to save your Studio Setup document.

Defining MIDI Devices in OMS

To define a MIDI device in OMS Setup:

1 Double-click the device's icon in the Studio Setup window.

2 In the MIDI Device Info dialog, select the Manufacturer and Model for the device from the pop-up menus. If the device is not listed, leave the Model set to "other" and enter a name for the device.



MIDI Device Info

3 Select the Receiving Channel for the device. If receiving multiple channels, select the option for "Is Multitimbral."

4 If you will record from the device in Pro Tools, select the option for "Is Controller." If the device will be a source or destination for MIDI Time Code, Beat Clock, or MIDI Machine Control, select the appropriate option.

5 Click OK.

Disabling Serial DMA in OMS

Pro Tools requires that you deselect the "Use Apple Serial DMA Driver When Available" option in OMS Setup. If you do not disable this option, problems will occur with MIDI and synchronization functions within Pro Tools.

To disable Serial DMA in OMS:

1. Double-click the OMS Setup application.
2. Choose Edit > Preferences.
3. Deselect "Use Apple Serial DMA Driver When Available" and click OK.
4. Quit OMS Setup.

Hard Drive Requirements

For audio recording and storage on the Macintosh, Pro Tools LE requires one or more qualified ATA/IDE or SCSI drives with the following properties:

- Formatted with HFS or HFS+ file system
- Data transfer rates of 3 MB per second or faster
- Drive spin speed of 7,200 RPM or faster
- Average seek time of 10.0 milliseconds or faster

For the latest compatibility information on hard drives and SCSI host bus adapters, visit the Digidesign Web site (www.digidesign.com/compato/).

Using System Drives for Audio

Although Pro Tools will let you record to your system drive, this is generally not recommended. Performance for recording and playback on system hard drives is worse than on non-system drives, resulting in lower track counts and fewer plug-ins.

You should record to system drives only when absolutely necessary—if your computer system has just one hard drive, or if your other hard drives are completely out of space.

SCSI Hard Drives

SCSI hard drives offer several advantages over ATA/IDE drives. First, SCSI drives can be external and therefore provide portable audio storage that is easily moved between systems. Second, SCSI drives offer slightly better performance when recording to large numbers of tracks; attempting to record to a large number of audio tracks with an ATA/IDE drive will result in a short delay before recording begins.

Initializing and Defragmenting Drives

It's recommended that you start with a newly initialized audio drive. You should also periodically *defragment* your audio drive to ensure continued system performance.

If you are using a SCSI hard drive, you can use the *ExpressPro-Tools* software from ATTO (included on the Pro Tools LE Installer CD) to initialize the drive. If you are using an ATA/IDE hard drive, use the *Drive Setup* utility included with the Apple System software.

Hard Drive Storage Space

Mono audio tracks recorded with 16-bit resolution at 44.1 kHz (CD-quality) require approximately 5 MB of hard disk space per minute. The same tracks recorded with 24-bit resolution require about 7.5 MB per minute. The following table lists the required drive space for certain track numbers and track lengths. In deciding the required hard drive space for your needs, plan accordingly.

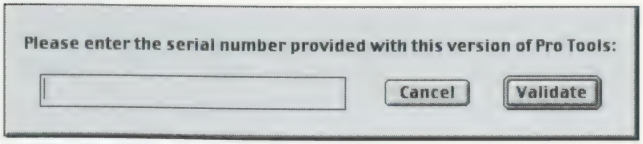
Required hard drive space for audio tracks

Number of tracks and length	16-bit at 44.1 kHz	16-bit at 48 kHz	24-bit at 44.1 kHz	24-bit at 48 kHz
1 mono track, 1 minute	5 MB	5.5 MB	7.5 MB	8.2 MB
1 stereo track (or two mono tracks), 5 minutes	50 MB	55 MB	75 MB	83 MB
1 stereo track (or two mono tracks), 60 minutes	600 MB	662 MB	900 MB	991 MB
24 mono tracks, 5 minutes	600 MB	662 MB	900 MB	991 MB
24 mono tracks, 60 minutes	7 GB	7.8 GB	10.5 GB	11.6 GB

Launching Pro Tools LE the First Time

Serial Number Entry

When launching Pro Tools LE the first time, you are prompted to enter a serial number.



Serial number entry for Pro Tools

The serial number is located on the inside cover of this guide. Enter it in the dialog when prompted, making sure to observe any spaces and capitalization, then click Validate.

chapter 3

Windows Configuration

BIOS and System Modifications

Before installing any hardware or software, first make changes to your computer's BIOS and System settings. These settings are necessary to ensure optimum performance for Pro Tools LE on Windows.

BIOS Settings

Different BIOS manufacturers often use different names to describe the same system function—or in some cases, do not provide a particular configuration option at all. The names and options that appear in your computer's BIOS may differ slightly from those described in the following procedure.

Make the following changes to your computer's BIOS settings:

1 Turn on your computer, or if it is already on, restart it.

2 During startup, enter the BIOS Setup by pressing the appropriate key (usually indicated in the startup message) on your computer keyboard. For most computers, this will be either F1, F2, or the Delete key.

3 In the appropriate page of the BIOS Setup, disable PCI Parity. If the PCI Parity option isn't available on your computer, skip this step.

4 Save changes, exit the BIOS Setup screen, and restart your computer.

Windows System Settings

In Windows, configure the following Control Panel settings.

Disable Auto Insert Notification for CD-ROM and removable media drives:

1 From the desktop, right-click My Computer and choose Properties.

2 In the System Control Panel, click the Device Manager tab.

3 Locate and double-click the device for your CD-ROM. In the CD-ROM Properties dialog, click the Settings tab.

4 Deselect the option for Auto Insert Notification and click OK.

5 Repeat for any removable media devices, such as CD-R, CD-RW, Jaz, and Zip drives.

6 Close the System Control Panel.

Enable DMA for any IDE hard drives:

1 From the desktop, right-click My Computer and choose Properties.

2 In the System Control Panel, click the Device Manager tab.

3 Locate and double-click the device for your IDE hard drive. In the Disk Drive Properties dialog, click the Settings tab.

4 Select the DMA option and click OK.

5 Repeat for any additional IDE drives.

6 Close the System Control Panel.

Other Software and Hardware Affecting System Performance

Pro Tools LE can also be affected by other software and hardware drivers installed on your computer. For best possible performance, it is recommended that you:

- Avoid running other Windows programs at the same time as Pro Tools LE.
- Turn off any software utilities that run in the background, such as calendars and virus protection.
- Disable Windows System sounds. In the Sound Control Panel, set the Sound Scheme to No Sounds.
- If your video display card supports it, enable Bus Mastering in the manufacturer's Control Panel.
- Disable any networking cards.

Installing the Digi 001 Hardware

Before installing the Pro Tools LE software, first install the Digi 001 card.

To install the Digi 001 card in your Intel computer:

1 Turn off your computer. Leave it plugged in so that it is grounded.

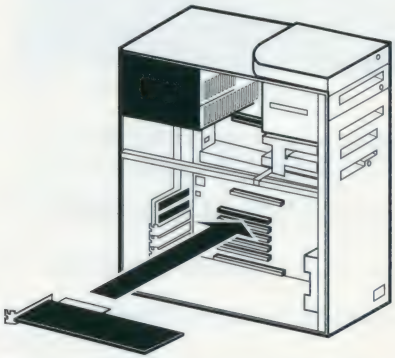
2 Open the computer case. If necessary, refer to the manufacturer's instructions for details.

3 Remove the rear slot cover and screw of any available PCI expansion slot.

4 Before handling the Digi 001 card, discharge any static electricity by touching the outer casing of the power supply.

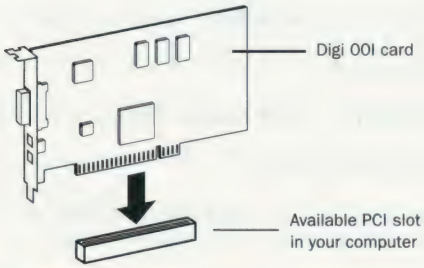
5 Remove the Digi 001 card from its anti-static bag.

6 Hold the card gently by the top edges, and line up its PCI connector with the PCI slot inside the computer.



PCI card installation for an Intel computer

7 When the connector and slot are aligned, press the card into the slot using firm, even pressure. The card should click into place. Secure the card with the previously removed screw. Make sure the card's audio connectors are accessible through the rear slot of the computer.



PCI card installation

8 Replace the computer case.

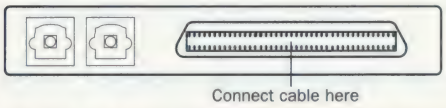
Connecting the Digi 001 I/O Box

⚠ *Your computer must be off when you connect or disconnect the I/O Box.*

To connect the Digi 001 I/O box:

1 Locate the connector cable with the wide ends that came with your Digi 001.

2 Align a cable end with the connector on the Digi 001 PCI Card, and insert the cable into the connector until it clicks into place.



Digi 001 PCI Card (outside computer view) showing cable connector

3 Align the other cable end with the Computer connector on the Digi 001 I/O Box, and insert the cable into the connector until it clicks into place.

4 Turn on your computer.

Installing the Windows Wave Drivers

Once you've installed the Digi 001 card and have turned on your computer, the Add New Hardware Wizard will prompt you to install the necessary Windows drivers.

To install the Windows wave drivers:

1 When the Add New Hardware Wizard appears, click Next.

Add New Hardware Wizard, Windows

2 When Windows asks what you want to do, select the option for "Display a list of all the drivers in a specific location" and click Next.

3 From the list of device types, select "Sound, video & game controllers," then click Next.

4 Insert the Pro Tools LE CD and click Have Disk.

5 Click Browse. Navigate to and select the WaveDriver98 folder on the Pro Tools LE CD, then click OK.

6 Click OK to close the Install from Disk dialog.

7 In the Select Device dialog, choose the Digidesign Digi 001 as your device and click OK.

8 Click Next to install the necessary driver components.

⚠ *If you are prompted that "DigiProx: Cannot run with this version of XXXXX.dll," follow the instructions in the dialog.*

9 Once Windows has finished installing the software for your new hardware device, click Finish.

Updating Older Wave Drivers

If you are already a Pro Tools user and are installing a new version of the Pro Tools LE software, the Pro Tools LE Installer will automatically update your existing wave drivers.

Installing the Pro Tools LE Software

After installing the Digi 001 hardware and its wave drivers, install Pro Tools LE.

To install Pro Tools LE on Windows:

1 Insert the Pro Tools LE Installer CD in your CD-ROM drive. A window opens, displaying the CD-ROM contents.

2 Open the Pro Tools LE Installer folder and double-click the Setup program.

3 When the installer opens, click Next to proceed.

4 Choose from the following three install options:

- Typical, recommended for first-time users
- Compact, installs the minimum components necessary to run Pro Tools LE
- Custom, lets you select which components are installed (for advanced users)

5 Click Next to install the selected option. Files are installed to the Digidesign folder inside the Program Files folder.

6 When installation is complete, restart your computer.

Installing the Demo Session

The Digi 001 system includes two demo sessions, *Pro Tools SoundCheck Digi001.pt5*, which you can use to verify that your system is working, and *Be There Digi001.pt5*, a more full-featured demo that you can use to test system playback, and to learn some features of Pro Tools LE using the tutorial information in Chapter 5, "Working with the Demo Session."

⚠ *Before installing the demo sessions to your audio drive, make sure the drive is configured as described in "Hard Drive Requirements" on page 22.*

To install the demo sessions:

1 Insert the Pro Tools LE Installer CD in your CD-ROM drive. A window opens displaying the CD-ROM contents.

2 Open the Pro Tools Demo Installer folder and double-click the Setup program.

3 When the installer opens, click Browse to set the destination folder to your audio drive, then click Next.

4 Select the install components for the SoundCheck Session and Be There Session.

5 Click Next to install the demo sessions.

Removing Pro Tools LE and the Digi 001 Wave Drivers

If for some reason you need to remove the Pro Tools LE software, you can do so from the Add/Remove Program Control Panel. You can also, if desired, remove the Digi 001 wave driver from the System Control Panel.

To remove Pro Tools LE from your system:

1 Choose Start > Settings > Control Panel.

2 Double-click Add/Remove Programs.

3 From the list of programs, select Pro Tools LE and click Add/Remove.

4 If the UnInstall Shield prompts you to remove shared files, click Yes to All.

5 Select Digidesign System Files from the list of programs and click Add/Remove.

6 Close the Add/Remove Programs Control Panel.

7 Restart your computer.

To remove the Digi 001 wave driver:

1 From the desktop, right-click My Computer and choose Properties.

2 In the System Control Panel, click the Device Manager tab.

3 Locate and select the Digi 001 device, then click Remove.

4 When prompted, confirm you want to remove the device.

5 Close the System Control Panel.

6 Using Windows Explorer, locate and delete the following file:

Windows\Inf\Other\DigidesignDALWDM.inf

7 Restart Windows.

Hard Drive Requirements

(Windows)

For audio recording and storage on the Windows, Pro Tools LE requires one or more qualified ATA/IDE or SCSI drives with the following properties:

- Formatted with FAT16 or FAT32 file system (FAT32 recommended)
- Data transfer rates of 3 MB per second or faster
- Drive spin speed of 7,200 RPM or faster
- Average seek time of 10.0 milliseconds or faster

For the latest compatibility information on hard drives and SCSI host bus adapters, visit the Digidesign Web site (www.digidesign.com/compato/).

Using System Drives for Audio

Although Pro Tools will let you record to your system drive, this is generally not recommended. Performance for recording and playback on system hard drives is worse than on non-system drives, resulting in lower track counts and fewer plug-ins.

You should record to system drives only when absolutely necessary—if your computer system has just one hard drive, or if your other hard drives are completely out of space.

SCSI Hard Drives

SCSI hard drives offer several advantages over ATA/IDE drives. First, SCSI drives can be external and therefore provide portable audio storage that is easily moved between systems. Second, SCSI drives offer slightly better performance when recording to large numbers of tracks; attempting to record to a large number of audio tracks with an ATA/IDE drive will result in a short delay before recording begins.

Formatting and Defragmenting Drives

It's recommended that you start with a newly formatted audio drive; and for optimum performance, the drive should be formatted with the FAT32 file system. You should also periodically *defragment* your audio drive to ensure continued system performance.

You can convert hard drives formatted with FAT16 to FAT32 with the Drive Converter utility included with Windows.

To format an audio drive:

1 From the desktop, double-click My Computer.

2 Right-click the hard drive you will use for audio and choose Format.

3 Set the Format Type to Full and click Start.

4 Follow the on-screen instructions. When formatting is complete, close the Format window.

To defragment an audio drive:

1 From the desktop, double-click My Computer.

2 Right-click your audio hard drive and choose Properties.

3 Click the Tools tab.

4 Click Defragment Now and follow the on-screen instructions.

5 When defragmenting is complete, close the Properties Control Panel.

Hard Drive Storage Space

Mono audio tracks recorded with 16-bit resolution at 44.1 kHz (CD-quality) require approximately 5 MB of hard disk space per minute. The same tracks recorded with 24-bit resolution require about 7.5 MB per minute. The following table lists the required drive space for certain track numbers and track lengths. In deciding the required hard drive space for your needs, plan accordingly.

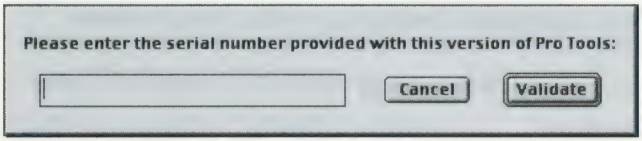
Required hard drive space for audio tracks

Number of tracks and length	16-bit at 44.1 kHz	16-bit at 48 kHz	24-bit at 44.1 kHz	24-bit at 48 kHz
1 mono track, 1 minute	5 MB	5.5 MB	7.5 MB	8.2 MB
1 stereo track (or two mono tracks), 5 minutes	50 MB	55 MB	75 MB	83 MB
1 stereo track (or two mono tracks), 60 minutes	600 MB	662 MB	900 MB	991 MB
24 mono tracks, 5 minutes	600 MB	662 MB	900 MB	991 MB
24 mono tracks, 60 minutes	7 GB	7.8 GB	10.5 GB	11.6 GB

Launching Pro Tools LE the First Time

Serial Number Entry

When launching Pro Tools LE the first time, you are prompted to enter a serial number.



Serial number entry for Pro Tools

The serial number is located on the inside cover of this guide. Enter it in the dialog when prompted, making sure to observe any spaces and capitalization, then click Validate.

chapter 4

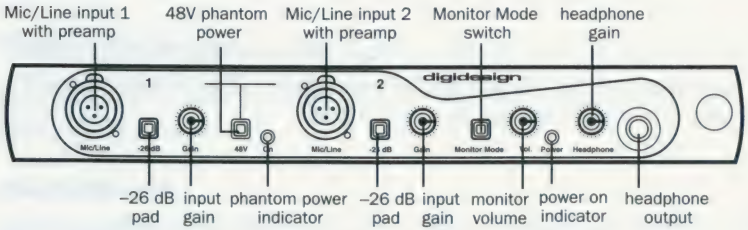
Connecting Your Studio

This chapter explains how to connect your Digi 001 to a mixer, amplification system, digital recorders, and other studio devices, and how to connect audio sources for recording.

Digi 001 I/O Box Inputs and Outputs

All Digi 001 inputs and outputs are factory calibrated for 14 dB of headroom below 0 dB, or full code. This means at the nominal reference input level (+4 dBu or –10 dBV) you can have up to 14 dB of headroom before input or output clipping occurs.

Connectors on the Digi 001 I/O Box Front Panel



Mic/Line Inputs 1 and 2

These balanced/unbalanced inputs are designed for microphones or line-level inputs (with the –26 dB pad). They accept XLR or 1/4" analog audio input connections.

–26 dB Pads 1 and 2

These switches allow you accommodate line-level signals on Mic/Line Input 1 and 2 by reducing input sensitivity by –26 dB.

Input Gain 1 and 2

These controls adjust the input gain of Mic/Line inputs 1 and 2.

Phantom Power

This switch applies 48V phantom power to Mic/Line inputs 1 and 2. These inputs provide 48V phantom power for microphones that require it to operate.

Dynamic microphones (like a Shure SM57) do not require phantom power to operate, but are not harmed by it. Most *condenser* microphones (like an AKG C300) *do* require phantom power to operate. If you are not sure about the phantom power requirements for your microphone, contact the manufacturer, or read your microphone's documentation.

⚠ *Although phantom power can be used safely with most microphones, ribbon microphones can be destroyed by it. Always turn off phantom power, and wait for the red phantom power indicator light to go completely off before connecting or disconnecting a ribbon microphone.*

Phantom Power Indicator

When lit (red), this LED indicates that phantom power is on.

Monitor Mode

When this switch is pushed in, the Digi 001 I/O Box switches to Monitor Mode, which allows you to monitor analog inputs 3–4 on the Digi 001 I/O Box even when the power for your computer is off. Use this to monitor an audio device such as a CD player or synth without turning on the computer.

Monitor Volume

This control allows you to adjust the output level of the Left and Right Monitor Outputs. This control also adjusts the level of these outputs when the I/O Box is in Monitor Mode. The monitor outputs mirror the audio routed to outputs 1–2 in software and on the I/O Box.

Power On Indicator

When lit (green), this LED indicates that the Digi 001 I/O Box is on. Your computer must be powered on to power the Digi 001.

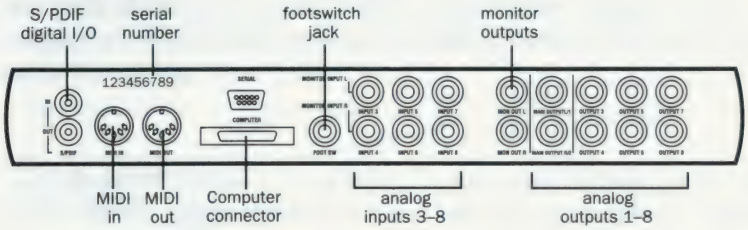
Headphone Gain

This control adjusts the output level of the headphone jack.

Headphone Output

Use the Headphone Output to connect stereo headphones. This jack accepts a 1/4" stereo plug. This outputs any audio that is routed to analog outputs 1–2 in Pro Tools LE. The Headphone Output is disabled in unpowered Monitor Mode (see "Monitor Mode" on page 26 for more information).

Connectors on the Digi 001 I/O Box Back Panel



S/PDIF Digital I/O

The Sony Phillips Digital Interface Format (S/PDIF) is used in many professional and consumer CD players and DAT recorders. The S/PDIF in/out jacks are unbalanced 2-conductor phono (RCA) jacks that utilize a full 24-bit, 2-channel digital data stream. To avoid RF interference, use 75-ohm coaxial cable for S/PDIF transfers and keep the cable length to a maximum of 10 meters.

MIDI I/O

The MIDI connectors on the Digi 001 I/O Box allow Digi 001 to act as a MIDI interface. A MIDI driver for this device is installed when you install Pro Tools LE, and recognized by Windows Multimedia, or when you update MIDI Cards & Interfaces in OMS Setup (Macintosh). One MIDI input and one MIDI output allow you to send and receive MIDI on 16 channels. These connectors accept standard 5-pin MIDI cables. Digi 001 MIDI I/O can be used in addition to any other MIDI interfaces you are using.

Computer Connector

This connector is used to connect the I/O Box to the Digi 001 PCI card. The cable for this is supplied with your system.

Footswitch Jack

This connector allows you to connect a footswitch that can be used for control of QuickPunch audio punch-in and punch-out, and for MIDI punch-in and punch-out recording features. Both continuous on/continuous off and instantaneous on/off pedals with a 1/4" TRS connector are supported. See "Recording with a Footswitch" on page 72 for more information.

Monitor Inputs (Analog Inputs 3–4)

These connectors are used to connect analog audio sources 3–4, or to connect a stereo source such as a CD player, synth, or cassette deck to monitor when using the Digi 001 I/O Box in Monitor Mode. In Monitor Mode, input 3 is routed to the Left output and input 4 is routed to the Right output. These connectors are balanced, 1/4" jacks.

Analog Inputs 3–8

These inputs are used to connect analog audio sources that are routed to Analog Inputs 3–8. These are balanced, 1/4" jacks for analog audio input connections. These analog inputs feature 24-bit analog-to-digital converters.

Monitor Outputs

These outputs can be connected to powered speakers, a stereo power amp, or another stereo destination to monitor your mix. The monitor outputs play the audio that is routed to analog outputs 1 and 2. Analog output 1 material is routed to the left monitor output, and analog output 2 material is routed to the right monitor output. These analog outputs feature 24-bit digital-to-analog converters. You can control the output level of the monitor outputs with the Monitor Volume control. These connectors are balanced, 1/4" jacks.

Main Analog Outputs 1–2

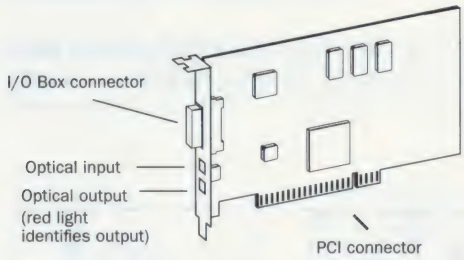
These main outputs play the audio that is routed to analog outputs 1–2. These outputs can provide left and right outputs to a tape deck for mixdowns, or to another stereo destination. These analog outputs feature 24-bit digital-to-analog converters. These outputs are balanced, +4 dBu line level. The connectors are 1/4" jacks.

Analog Outputs 3–8

These outputs play the audio that is routed to analog outputs 3–8. These analog outputs feature 24-bit digital-to-analog converters. These outputs are unbalanced, –10 dBu line level. The connectors are 1/4" jacks.

Connectors on the Digi 001 PCI Card

The Digi 001 PCI Card installs in an available PCI slot in your computer. The PCI Card includes optical digital I/O for 8 channels of ADAT I/O or 2 channels of S/PDIF I/O. The card also includes a connector for the Digi 001 I/O Box.



Optical Input

The optical input connects to an optical digital audio source. This can be either an 8-channel ADAT format audio source or a 2-channel S/PDIF audio source. The digital format that this input accepts is switchable in Pro Tools LE. This connection provides up to 24-bit digital audio for either format. This format uses a standard optical "lightpipe" cable. One optical cable is included with Digi 001.

Optical Output

The optical output sends optical digital audio to a destination such as a digital mixer or a digital recorder. This can be either an 8-channel ADAT format destination or a 2-channel S/PDIF audio destination. The digital output format is switchable in Pro Tools LE. This connection provides up to 24-bit digital audio for either format. This format uses a standard optical "lightpipe" cable. One optical cable is included with Digi 001.

Making Signal Connections to Digi 001

You can use Digi 001 with a variety of audio setups, including:

- a mixer, power amplifier, and speakers
- a mixer and a pair of amplified, self-powered speakers
- a stereo receiver and speakers
- a pair of amplified, self-powered speakers

Monitoring Audio

Monitoring volume for speakers connected to the Monitor Outputs is controlled with the Monitor Volume knob (see "Monitor Volume" on page 26 for more information). Headphone volume is controlled with the Headphone Gain knob (see "Headphone Gain" on page 26 for more information).

To connect headphones:

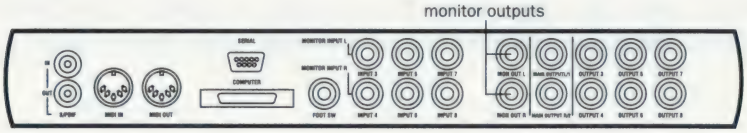
1 Connect headphones to the Headphone jack on the I/O Box. The Headphone input accepts a stereo 1/4" plug. If your headphones have a smaller "mini-plug," purchase an adapter from your local dealer. For best results, use high-quality, closed-ear headphones.

2 Adjust headphone volume with the headphone gain knob.

⚠ *The Digi 001 headphone output can produce very loud output levels. Prolonged exposure can cause hearing damage. Adjust headphone volume carefully.*

To connect a home stereo:

1 Connect 1/4" cables to the Monitor outputs on the back of the Digi 001 I/O Box.



2 Connect the outputs to an available pair of left and right inputs on your stereo.

Home stereo systems often use RCA connectors. You can use an adaptor or a special cable to convert from the 1/4" connectors used by Digi 001 to the RCA connectors on your home stereo.

To connect monitor speakers with a power amp or self-powered monitor speakers:

1 Connect 1/4" cables to the Monitor outputs on the back of the Digi 001 I/O Box.

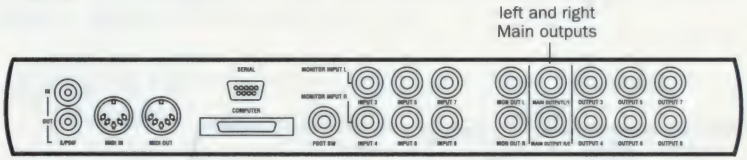
2 Connect the outputs from Digi 001 to the left and right power amp inputs, or to the left and right self-powered speakers.

Connecting a Recorder for Mixdowns

After you record and mix your sessions using your Digi 001, you may want to mix them down to a DAT, audio cassette, or other stereo 2-track recording device.

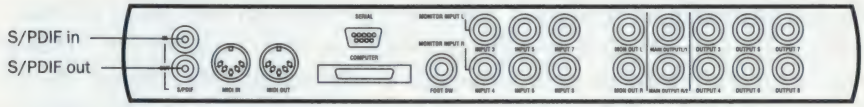
Connecting an Analog Deck

Connect your recorder (cassette deck or other analog device) to the Main outputs on the back of the Digi 001 I/O Box. L/1 connects to the left input of your recorder, and R/2 connects to the right input. These outputs are 1/4" jacks. You may need adapter cables if your mixdown deck has RCA inputs.



Connecting a Digital Deck

If you have a DAT or other digital device that can send or receive S/PDIF digital audio data, connect it to the S/PDIF In and S/PDIF Out RCA jacks on the back of the Digi 001 I/O Box.



Connecting Tascam DA30 DAT Recorders

If connecting to a Tascam DA30 DAT recorder, you'll need to set the S/PDIF I/O format in Pro Tools LE.

To set the S/PDIF I/O format in Pro Tools LE:

1 Launch Pro Tools LE and choose Setups > Hardware.

2 Click Other Options and set the S/PDIF I/O to DA30. Click Done.

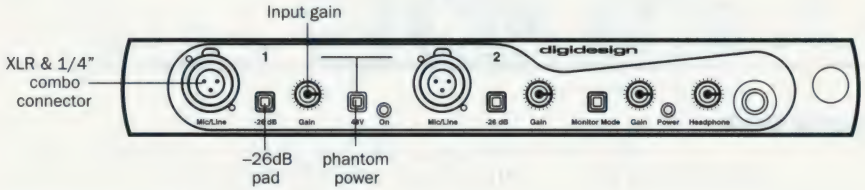
3 Click OK to close the Hardware Setup dialog.

Connecting Audio Sources to Digi 001

Audio sources of two types can be used with Digi 001: analog or digital.

Analog Audio

Analog audio signals are output by microphones, synths, mixers, and instruments with magnetic pickups. Of these sources, microphones and magnetic pickup instruments output the quietest signals, and generally require the most amplification. Digi 001 includes preamps for these sources on Mic/Line inputs 1 and 2, and 48v phantom power for both channels. Mic/Line inputs 1 and 2 accept XLR or 1/4" connectors.



Analog preamp input

Keyboards, preamps, and mixers output "line-level" audio, which varies with each device between the –10 and +4 standards. Use Digi 001's line level inputs 3–8 (on the back of the Digi 001 I/O Box) for these devices. Digi 001 includes software controllable gain to accommodate the different line levels that these devices can generate. Inputs 3–8 accept 1/4" connectors. You can also connect line-level signals to Mic/Line inputs 1 and 2 on the front by pressing the –26 dB pad switch.

Digital Audio

Digital audio represents analog waveforms using thousands of digital samples of the analog waveforms each second. All audio on your hard disk in a Pro Tools LE session is digital audio.

Digi 001 provides digital inputs for ADAT and S/PDIF format digital audio.

ADAT Format

The ADAT format was developed by Alesis for use in their ADAT multitrack recorders. Each ADAT optical connection provides 8 channels of digital audio with 24-bit capability. You can connect an ADAT or other ADAT optical format device directly to the optical I/O on the Digi 001 PCI Card. The optical I/O connectors accept optical cables.

S/PDIF

S/PDIF (Sony/Phillips Digital Interchange Format) I/O is available on many DAT decks, compact disc players, and other digital devices. Each S/PDIF connection provides 2 channels of digital audio with 24-bit capability. You can connect a S/PDIF digital input to either the Optical connectors (see Figure 1), or to the S/PDIF RCA connectors on the back of the Digi 001 I/O Box. The optical connectors accept optical cables; the RCA connectors accept RCA cables.

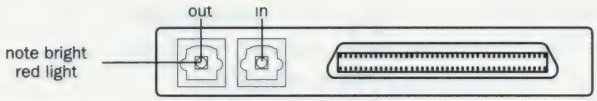


Figure 1. Optical I/O on the Digi 001 PCI Card

⚠ *Only one S/PDIF input pair can be used at a time. For example, if you use the optical input for S/PDIF data, you cannot use the RCA inputs.*

S/PDIF Mirroring

Pro Tools LE uses S/PDIF mirroring to automatically "mirror" the audio that is sent to outputs 1 and 2 on the S/PDIF RCA outputs. This is useful if you are monitoring a mix using your audio outputs, and also recording the same source to an external S/PDIF device.

You can disable this S/PDIF mirroring. You might do this if you wanted to use the S/PDIF outs to send a separate signal to an external digital effects unit, or if you wanted to send only certain outputs to the digital device. If you disable S/PDIF mirroring you are able to select the S/PDIF outputs separately, and route tracks or sends to them.

To enable or disable S/PDIF mirroring:

1 Choose Setups > Playback Engine.

2 Click Other Options.

3 Select or deselect the option "Enable S/PDIF Mirroring."

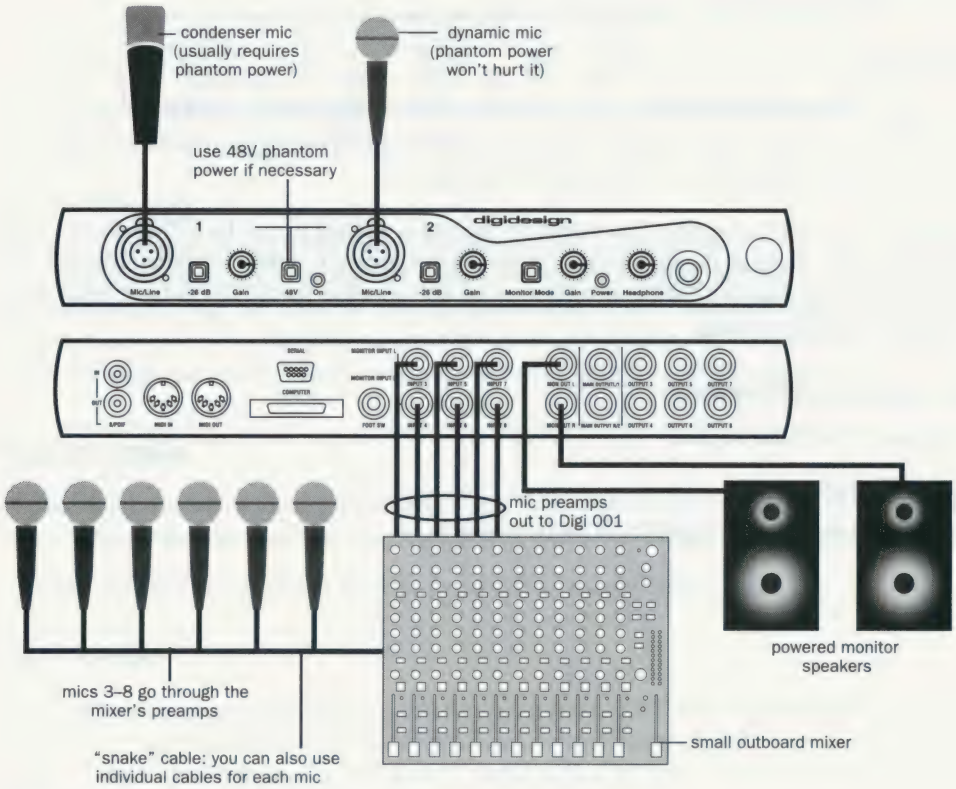
Connecting Audio Sources

To connect an analog audio source:

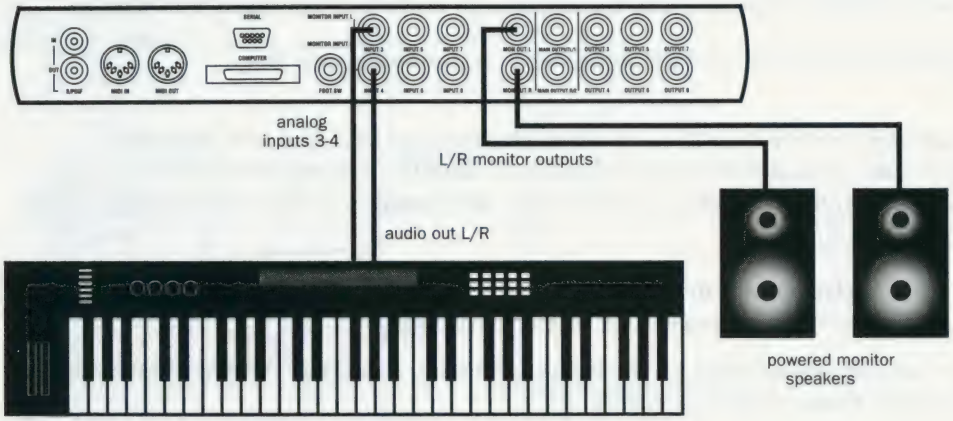
- Plug a microphone directly into Mic/Line Input 1 or 2 on the front of the Digi 001 I/O Box. These inputs accept XLR connectors or 1/4" TRS connectors. If your microphone requires phantom power, press the Phantom Power switch (labeled 48V).

> ⚠ *Although phantom power can be used safely with most microphones, ribbon microphones can be destroyed by it. You should always turn off phantom power, and wait for the red light to go completely off, before connecting or disconnecting a ribbon microphone.*

- Plug line-level sources (synths, outputs from your mixer, or microphones or guitars that have been amplified by an outboard preamp) into the analog inputs on the back of the Digi 001 I/O Box.



Connecting several microphones to a Digi 001



Connecting a synth to a Digi 001

To connect a digital audio source:

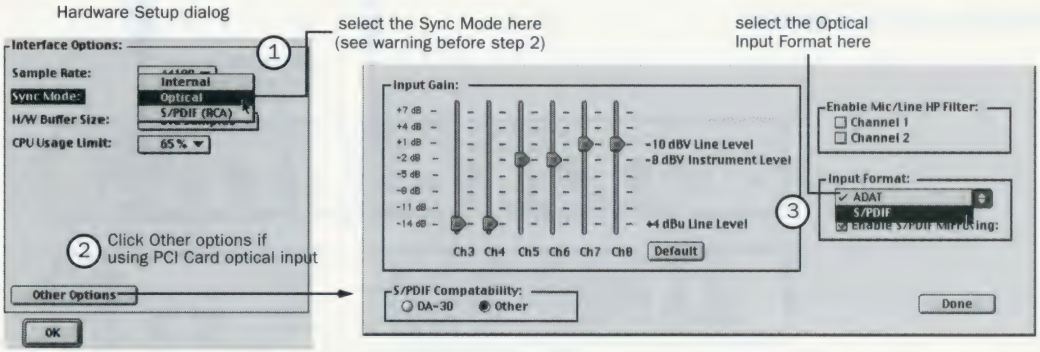
1 Connect an ADAT or S/PDIF format optical device to the Optical In on the Digi 001 PCI Card, or connect an RCA S/PDIF device to the RCA connectors on the back of the Digi 001 I/O Box.

⚠ *You can only use one pair of S/PDIF inputs (either RCA or optical) at a time.*

⚠ *The next step is only required if your device requires Pro Tools LE to sync to it. (In most cases, it is more desirable for a device to sync to Pro Tools LE.) This might be the case if you are recording from an Optical or S/PDIF device. Read your device's documentation for more information.*

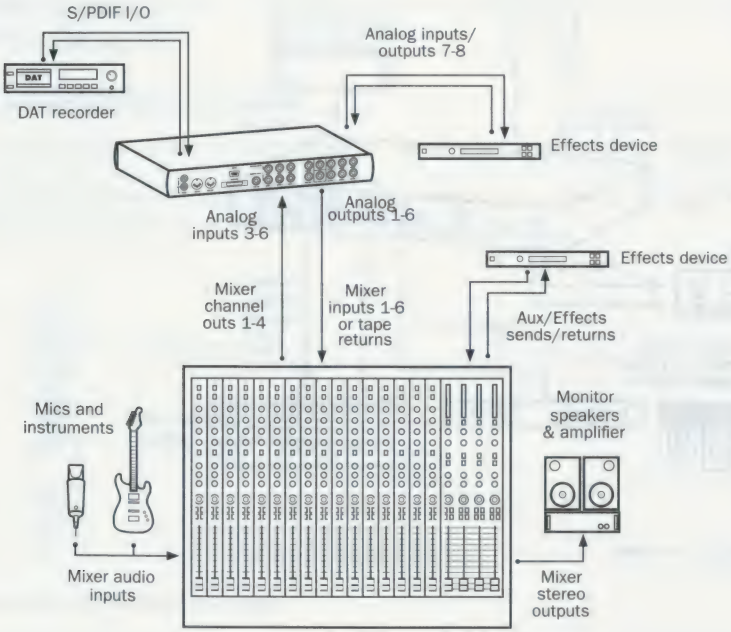
2 In Pro Tools LE, select a Sync Mode. Choose Setups > Playback Engine and select Optical or S/PDIF (RCA), depending on where you connected your digital device.

3 If you are using the optical input on the Digi 001 PCI Card, click Other Options and select the correct Optical Input Format (ADAT or S/PDIF).

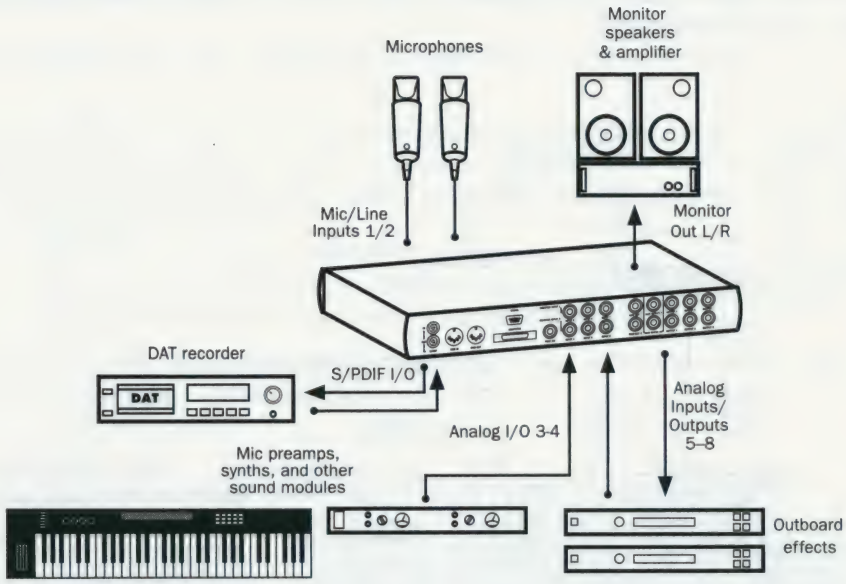


Studio Setup Diagrams

Your setup will differ depending on which of these systems you use. The illustrations that follow show two typical home studio setups.



Digi 001 studio configuration with a mixer



Digi 001 studio configuration without a mixer

Connecting an ADAT to Digi 001

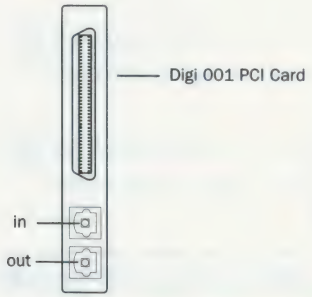
If you are using an ADAT or other ADAT format optical device with Digi 001, you can connect it to the optical ports on the Digi 001 PCI Card. You can also connect a S/PDIF device that uses optical connectors to this port.

After you have installed, configured, and launched Pro Tools LE, use the following instructions for connecting an ADAT.

To connect an ADAT to Digi 001:

1 Connect the ADAT optical output to the Optical In port on the Digi 001 PCI Card.

2 Connect the ADAT optical input to the Optical Out port on the Digi 001 PCI Card. When the Digi 001 is on, its Optical Out port emits a red light.



Red light indicates optical output

3 In Pro Tools LE, choose Setups > Playback Engine and select Optical from the Sync Mode pop-up.

4 Click Other Options and select ADAT from the Input Format pop-up.

Using Monitor Mode

The Monitor Mode feature lets you monitor analog inputs 3–4 on the Digi 001 I/O Box even when the power for your computer is off, or your Digi 001 I/O Box is disconnected from the computer. You can use this to monitor a CD player, synth, or tape machine without an external mixer, and without your computer on.

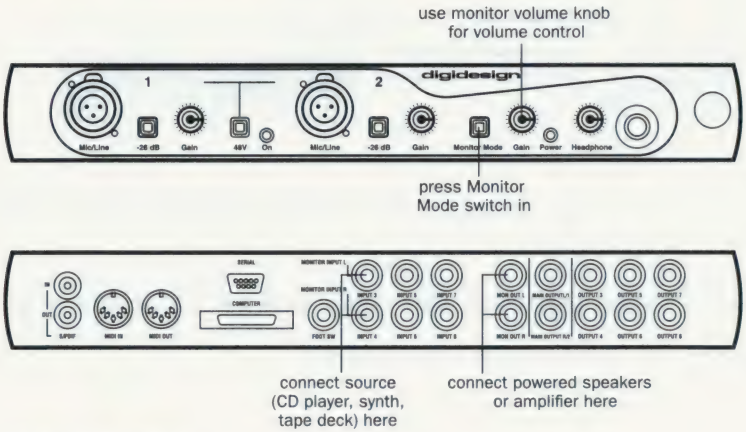
To use Monitor Mode:

1 Connect analog audio outputs of your device to analog inputs 3 and 4 on the back of the Digi 001 I/O Box.

2 Connect speakers for monitoring audio to the Monitor outputs on the back of the Digi 001 I/O Box (see "Monitoring Audio" on page 30 for connection information).

3 Press the Monitor Mode switch in.

4 Adjust the monitoring volume using the monitor volume knob.



Using Monitor Mode

MIDI Connections

Using the Digi 001's built-in MIDI ports or an external MIDI Interface, a MIDI keyboard controller and MIDI instruments, you can take full advantage of the MIDI features of Pro Tools LE. These include recording and editing MIDI tracks, synchronizing to MIDI Time Code or MIDI Beat Clock (this requires an appropriate MIDI interface) and using a MIDI control surface.

To connect MIDI devices:

1 Using standard 5-pin MIDI cables, connect the MIDI Out of the MIDI device or controller to the MIDI In of your Digi 001 I/O Box.

2 Connect the MIDI In of your MIDI device or controller to the MIDI Out of the Digi 001 I/O Box.

3 Connect the audio outputs of your device to the audio inputs of the Digi 001 I/O Box (or to an external mixer if you are using one).

For information on configuring OMS (Open Music System), which is required by Pro Tools LE on the Macintosh, see "Installing and Configuring OMS" on page 9.

For information on configuring a MIDI control surface for use with Pro Tools LE, see the online MIDI Control Surfaces Guide.

Using External Effects Devices

The Digi 001 can make dedicated connections to external analog or digital devices. You can send and return signals to analog devices using the analog inputs and outputs on the Digi 001 I/O Box. You can also send and return a digital signal to an external device that supports digital I/O (such as a reverb unit), and monitor with the analog outputs or (if unused) the other digital output.

If you want to use the digital inputs and outputs on your Pro Tools LE system as effects sends and returns to a digital effects device, Pro Tools LE should be the clock master in most cases. Set your digital effects device to accept an external digital clock so that it synchronizes to Pro Tools LE.

To connect an external analog device to your system:

1 Connect an unused output (or outputs if stereo) on the Digi 001 I/O Box to an input (or inputs if stereo) of the external signal processor.

2 Connect the output (or outputs if stereo) of the external signal processor to an unused input (or pair of inputs if stereo) on the Digi 001 I/O Box.

To set up a send to an external digital device (digital sends/returns only):

1 Choose Setups > Playback Engine and click Other Options.

2 Do one of the following:

- If the external device is connected to the S/PDIF RCA jacks, deselect S/PDIF Mirroring. (When S/PDIF Mirroring is on, digital output at the S/PDIF RCA jacks exactly mirrors the output of analog Channels 1–2.) If you disable S/PDIF Mirroring, you must reconfigure your I/O Setup to reflect this change. Refer to the *Pro Tools Reference Guide* for details on using the I/O Setup dialog to do this.
- If the external device is connected to the Optical ports, choose a format (most likely S/PDIF for an effects device) from the Optical Format pop-up menu.

3 Choose Internal from the Sync Mode pop-up menu (in most cases).

4 Click OK.

You can use the I/O Setup dialog (Setups > I/O Setup) to label the inputs and outputs you are using in Pro Tools LE and identify them as inserts or sends when working in a session. Refer to the Pro Tools Reference Guide for details.

chapter 5

Working with the Demo Session

Playing the Demo Session

In this section, you will open and play back the demo session. You can also use the included tutorial to learn some of the mixing and editing features of Pro Tools LE.

What's a Session?

A session is simply a Pro Tools LE document that contains all of your mixing, editing, and MIDI instructions for a song. Session files are covered in detail in the *Pro Tools Reference Guide*.

Using an Older Macintosh?

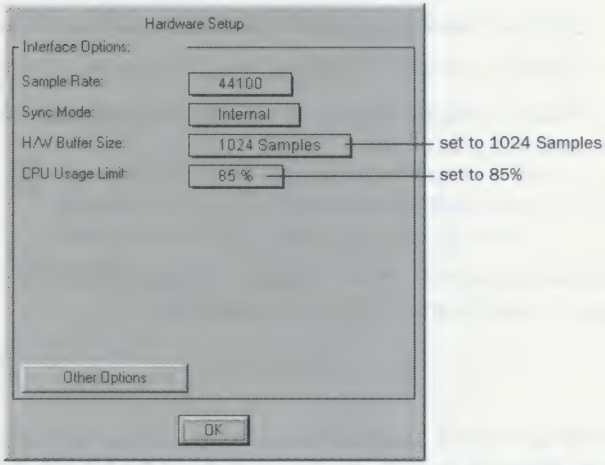
Pro Tools LE uses your computer's processor for audio tasks. This processing can be very intensive for older computers, such as pre-G3 Power Macintoshes. If you have an older computer, the following steps will help you get better performance from Pro Tools LE.

To set up Pro Tools LE for a slower, pre-G3 Macintosh:

1 Launch Pro Tools LE by opening the Digidesign folder, then the Pro Tools folder, and double-clicking Pro Tools LE.

2 Set the maximum Hardware Buffer Size. Choose Setups > Hardware, then set the H/W Buffer Size to 1024 samples, using the pop-up.

3 Set the maximum CPU usage limit, by setting the CPU Usage Limit in the Hardware Setup dialog to 85%, using the pop-up. Click OK.

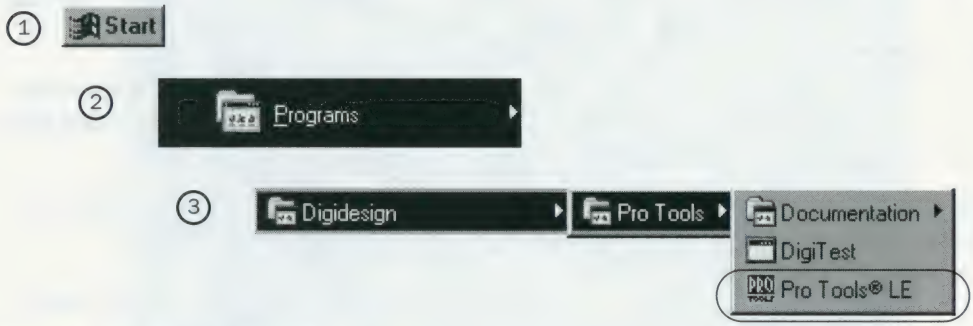


Hardware Setup dialog, showing settings for slower Macintosh computers

Using a Slow Windows PC?

Pro Tools LE uses your computer's processor for audio tasks. Although most supported Windows machines will have plenty of horsepower to run Pro Tools LE, you may experience performance problems with slower computers. If you have an older computer, the following steps will help you get better performance from Pro Tools LE.

1 Launch Pro Tools LE by choosing Start > Programs > Digidesign > Pro Tools > Pro Tools LE.



Launching Pro Tools LE in Windows

2 Set the maximum Hardware Buffer Size. Choose Setups > Hardware, then set the H/W Buffer Size to 512 or 1024 samples, using the pop-up.

Buffer settings for slower Windows PCs

3 Set the maximum CPU usage limit, by setting the CPU Usage Limit in the Hardware Setup dialog to 85%, using the pop-up.

How the Demo Session is Structured

The Pro Tools LE demo session actually contains two different mixes of the song "Be There." The first mix shows off the features and great sound quality of Pro Tools LE. The second mix guides you along with the tutorial information included in this guide. Go to "Mixing the Demo Session Tutorial" on page 48 when you're ready to start this tutorial.

Play the Demo Session

To play the demo session:

1 Locate the demo session on the audio drive that you chose when you installed it. On the audio drive, open the folder *Pro Tools LE Demo Sessions*. Then open the folder *"Be There" Demo Session* (Macintosh) or *Be There Demo Session* (Windows).

2 Double-click the session file, *Be There Digi001* (Macintosh) or *Be There Digi001.pt5* (Windows) to open the session (if Pro Tools LE is not running, this will automatically launch it).

Macintosh

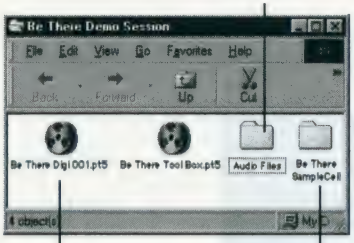
demo session (double-click to open)

holds session audio files

holds instruments and samples for SampleCell users

Windows

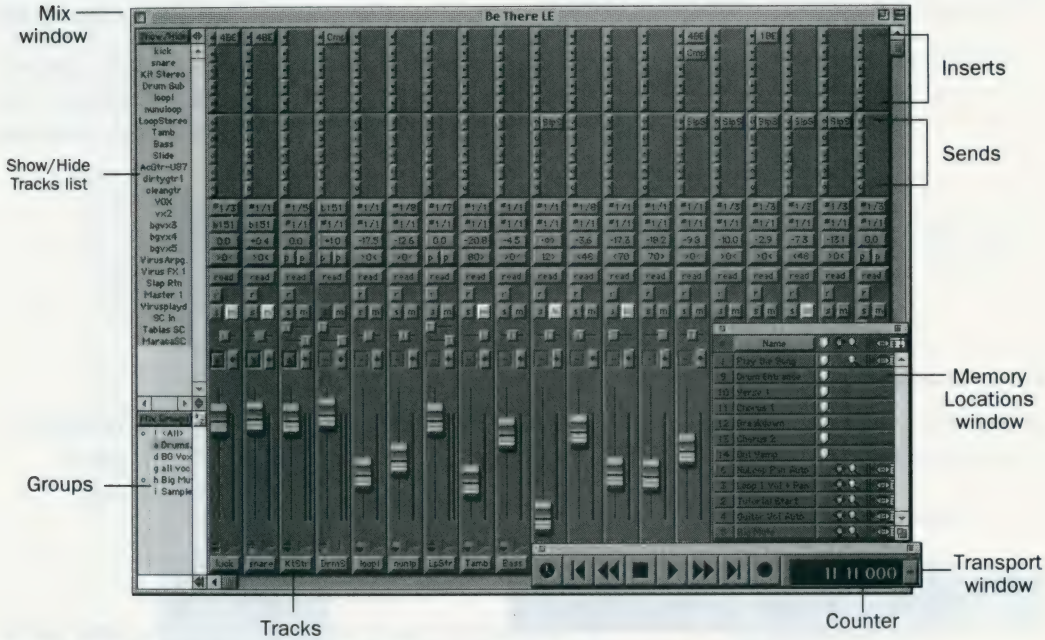
holds session audio files



demo session (double-click to open)

holds instruments and samples for SampleCell users

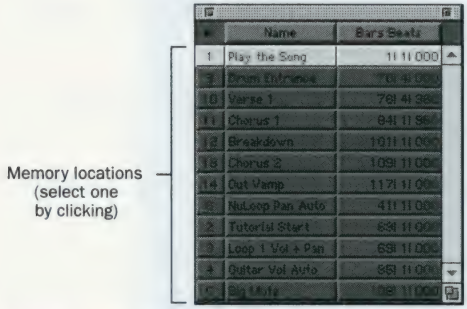
"Be There" opens, and appears like this:



Be There demo session, showing the Mix, Memory Locations, and Transport windows

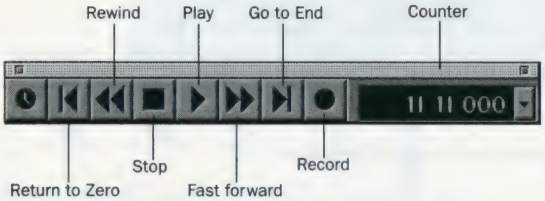
3 Make sure that the Monitor Mode switch is out (not engaged).

4 Click the first Memory Location, "Play the Song," in the Memory Locations window. This Memory Location locates the beginning of the song. If the Memory Locations window is not showing, choose Windows > Show Memory Locations to show it.



Memory Locations window

5 Click Play in the Transport window. If the Transport window is not showing, choose Windows > Show Transport to show it.



Transport window

6 You should hear the song playing back. Click Stop to stop playback.

Mixing the Demo Session Tutorial

Now it's time to start mixing audio in Pro Tools LE. But first, a common question answered for you:

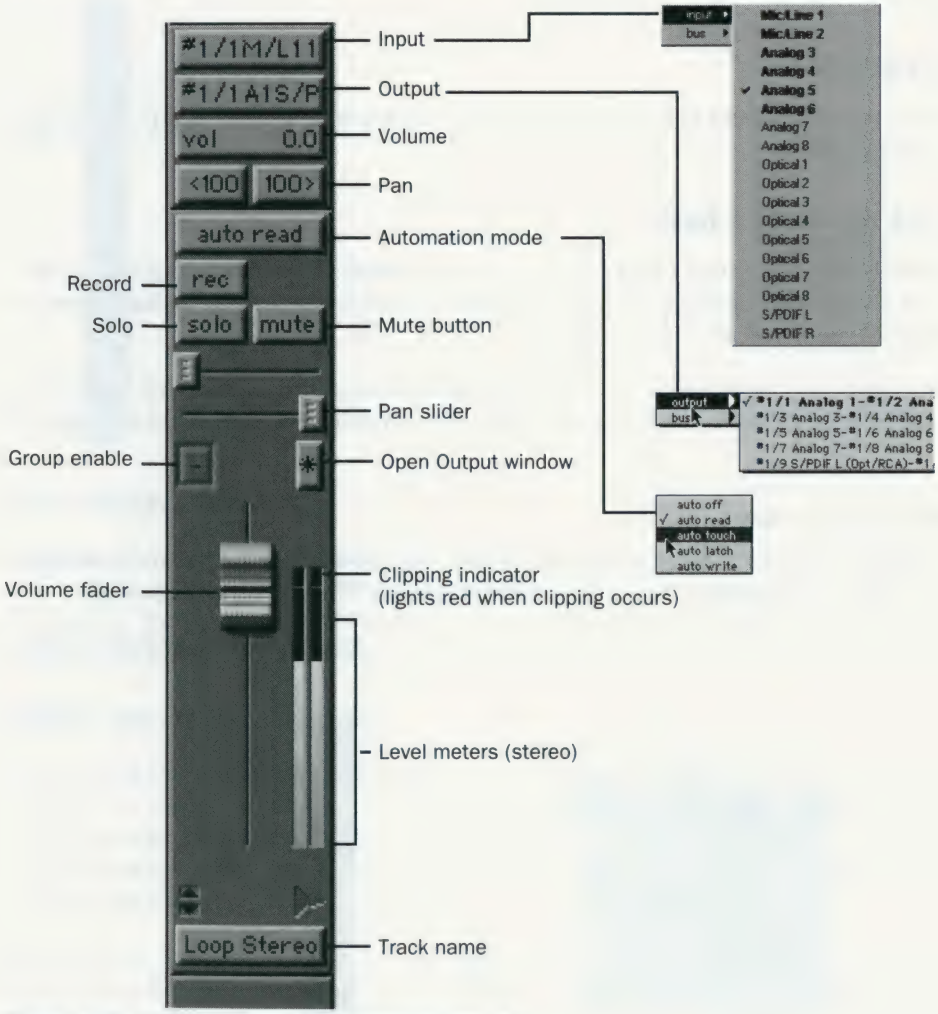
Can I Ruin My Recording?

When you edit and mix audio in a session, you don't actually change the underlying audio files. So even with many different sessions based on the same audio files, with different mixes and arrangements, your audio files remain physically unchanged, safe within the session's Audio Files folder. You don't lose your valuable recordings when you change your mix or save a different session, and you can freely try arrangements and ideas.

The Pro Tools LE Workspace

Pro Tools LE provides two main windows for visual display of your tracks—the Mix window and the Edit window. We'll start working with the Mix window, and later we'll work in the Edit window.

The Mix window looks and operates like a hardware mixer with automation. Each track is represented as a *channel strip*. Channel strips have controls for volume, panning, automation, inserts and sends, recording, and more.



Channel strip in the Mix window and associated pop-ups

To view the Mix window:

- Select Windows > Show Mix.

The demo session is set up with the Narrow Mix Window display option enabled. This allows you to view more tracks in the Mix window by making the channel strips narrower.

To make a normal-width Mix window narrow, or a narrow Mix window normal-width:

- Select or deselect Display > Narrow Mix Window.

All Right, Let's Mix!

Now that you've been introduced to some elements of the Mix window, it's time to dive in and start mixing the demo session.

Adjusting the Volume of a Track

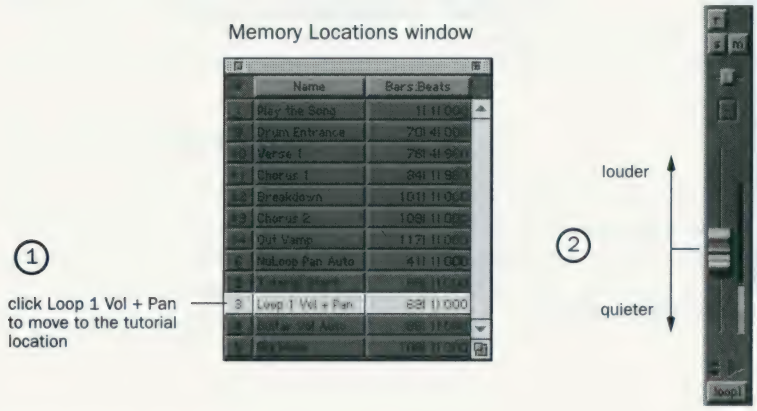
First, adjust the volume of the track called "loop1." Start by clicking the Memory Location "Loop 1 Vol + Pan" in the Memory Locations window. This window, shown in the illustration that follows, is used to navigate to specific locations in a session.

Play the session and view the Mix window, then adjust the volume of the track labeled "loop1" up and down, and listen to the difference in the mix. The volume is indicated on the track's Volume indicator.

To adjust the volume of a track:

1 Locate the proper tutorial spot by clicking "Loop 1 Vol + Pan" in the Memory Locations window. Now only the channel strip labeled "loop1" and the Master Fader channel strip are showing.

2 Click the Volume fader on the "loop1" channel strip and move it up or down to increase or decrease volume.



Panning Tracks

Now try panning the same track. To pan a track, you click the Pan slider and drag it to the left or right, to move the audio in the corresponding direction in the stereo field.

To adjust panning of a track:

- Click the Pan slider and drag it to the left or right to pan the track left or right in the mix.

Mix Automation

Automation is a way to control the movements of faders, sliders, and other controls of the Pro Tools LE mixer, and to have the controls remember the moves you've made when you play back the session. You can think of automation like a person with a lot of hands and a perfect memory working the controls during a mix.

Writing Your Own Automation

Let's write some automation for the guitars. Click the Memory Location "Guitar Vol Auto," and click Play in the Transport window. In preparation for your work here, some tracks are muted so you can easily hear how the guitars mix with the bass and drums. First, try mixing the guitar volumes like you mixed the volume for "loop1," and notice how each volume fader moves back to its original position after you let it go.

Starting with the track "cleangtr," set the Automation mode to Auto Write, then move the volume fader during playback to write volume automation. To hear the automation, switch back to Auto Read mode. Then do the same thing for the track "dirty1."

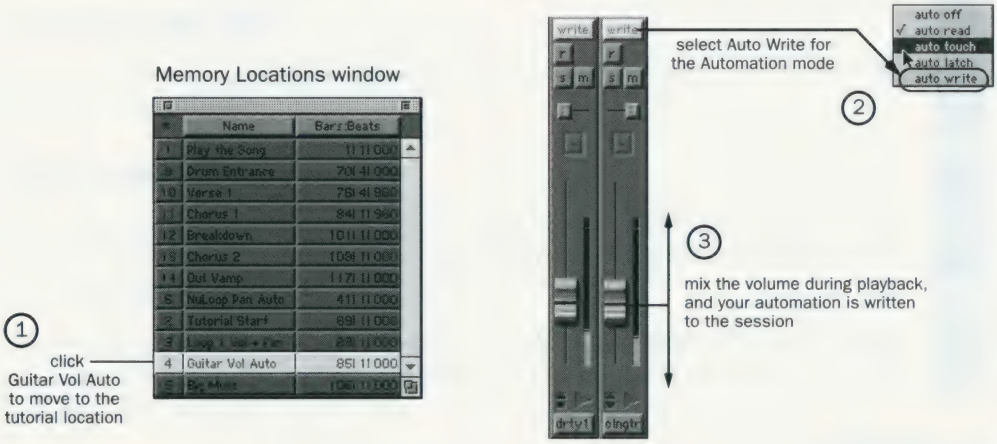
To write automation:

1 Click "Guitar Vol Auto" in the Memory Locations window to go to the tutorial location.

2 On the track "cleangtr," click the Automation mode button and choose Auto Write for the Automation mode.

3 Click Play in the Transport window. Automation begins writing for the track you have selected. Move the Volume fader to write changes to the automation.

4 When you have finished writing automation, click Stop.



To play back automation:

1 Set the Automation mode on the "cleangtr" track back to Auto Read. Now your automation will be read as the track is played back.

2 Play the song. Your automation is played back as the song plays. The Volume fader in the Mix window also moves as the song plays back, displaying your automation.

Now write volume automation for the distorted guitar track "dirty1," using the same steps.

Mixing in the Edit Window

The Edit window can be used for many editing tasks, and it also lets you "draw" very precise Mix automation. First, we'll use the Edit window to expand on the automation we wrote in the Mix window by drawing a precise fade-out on the Master Fader at the end of the song.

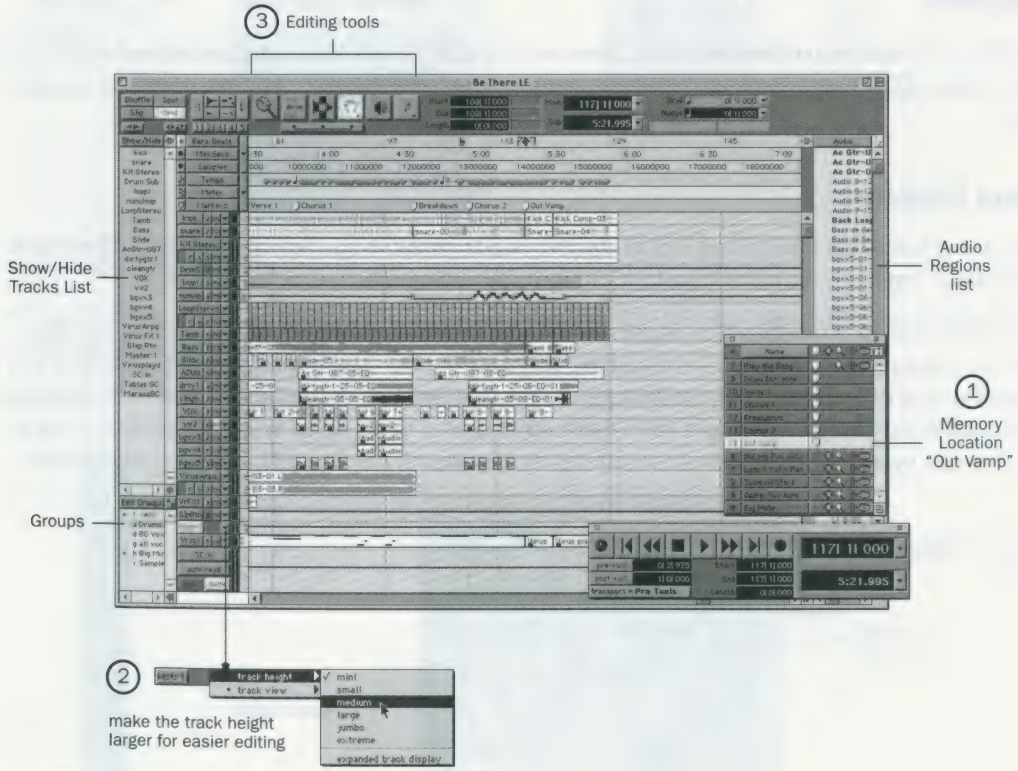
Drawing Automation in the Edit Window

In the Edit window, you can view different data for a track, including a representation of the actual waveform, and volume, mute, and pan automation. In this example, we'll view the Master Fader, which controls the volume of the overall mix, and fade out the end of the song to silence.

To draw a volume fade in the Edit window:

1 First, click the Memory Location "Out Vamp." Then switch to the Edit window by choosing Windows > Show Edit.

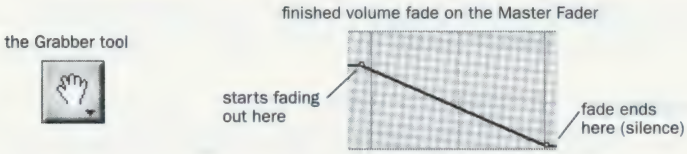
2 Next, make the track height larger for the Master Fader track by clicking the Track Height Selector and choosing Medium. (See the bottom of the following illustration.) This will make it easier for you to draw the fade.



Edit Window showing the Memory Location "Out Vamp"

3 Using the Grabber tool, click on the volume line at the point you want to start fading out. A small point appears on the volume line. If you make a mistake and want to delete a point on the volume line, Option-click (Macintosh) or Alt-click (Windows) the point.

4 Click again with the Grabber at the point where you want the fade-out to end (reach silence), then drag the second small point down to the bottom of the track.



5 You can easily adjust the start and end points of the fade by clicking on one of the points you have made and dragging it to the left or right.

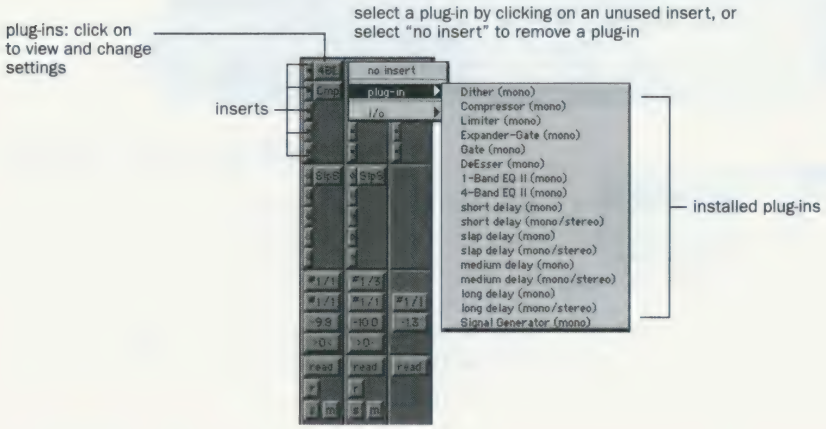
Plug-Ins

Pro Tools LE provides a collection of Real Time AudioSuite (RTAS) plug-ins that can be used to process audio tracks. RTAS plug-ins are provided for common effects such as equalization, compression, and delay.

Using Plug-Ins

Plug-ins are placed on tracks using any of the five *inserts* available on each channel strip. The insert, as the name implies, inserts the plug-in effect into the audio path.

In the Mix window, you can add a plug-in by clicking an insert on a track, and choosing a plug-in from the pop-up menu. You can do this during playback or when playback is stopped. Note that you can add several different instances of a plug-in in the same session, depending on your CPU's power. For example, the demo session uses the 4-band EQ plug-in 3 times. Once you add a plug-in to an insert, you can open it to view and adjust settings by clicking on the plug-in name next to the insert.



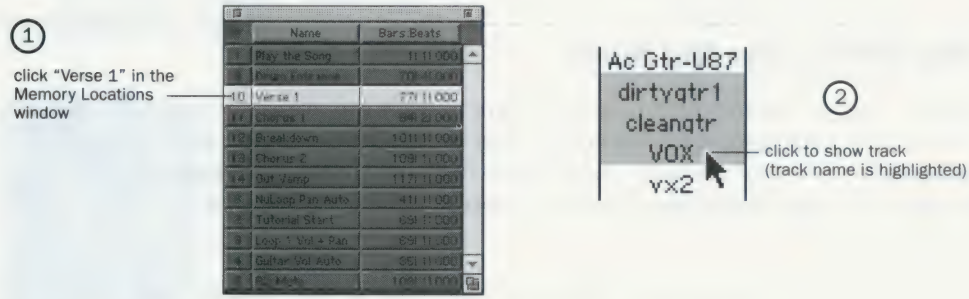
Try it!

Several plug-ins are already activated in the demo session "Be There." We'll try adjusting the EQ plug-in on the track called "VOX." First, you'll have to find a good location to hear the vocals. We'll start at the first verse. But since the "VOX" track isn't showing, we'll have to show it first by clicking it in the Show/Hide Tracks list on the left of the Mix window.

To change plug-in settings:

1 Show the Mix window by choosing Windows > Show Mix. Click the Memory Location "Verse 1."

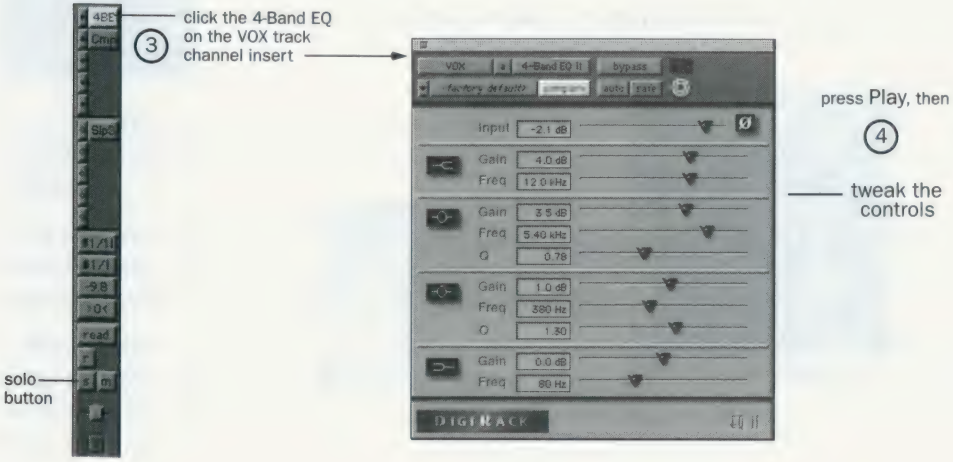
2 To show the vocal track, click "VOX" in the Show/Hide Tracks List.



3 View the plug-in by clicking on the plug-in name next to the insert.

4 Click Play in the Transport window, and adjust the plug-in settings, listening to the change in the audio. Feel free to tweak at will!

5 When you have finished, close the plug-in by clicking the Close box.



Soloing

You may find it easier to adjust a plug-in while listening only to that track. This is called *soloing* a track.

To solo a track:

1 Click the Solo button on the channel strip. Play the song.

2 Click the Solo button again when you are done, to hear the entire mix again.

You can solo more than one channel, by clicking the solo buttons for multiple channels.

Cool Mix Tricks: The Big Mute

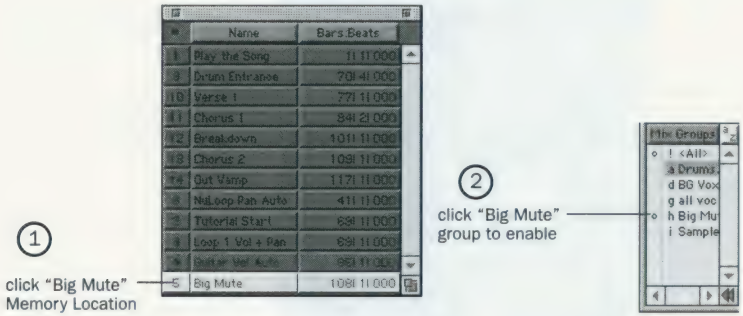
Now that you've started mixing with Pro Tools LE, here's a really cool thing you can do. We call this The Big Mute, and it's one of those tricks you hear often in popular songs of any genre. The Big Mute is basically an automated mute across a bunch of tracks used to highlight a small section of the song. We'll write this mixing move as mute automation across all those tracks using an automation group that's already set up.

To understand this trick better, you can refer to the information on Mix Automation and the information on Groups in the Pro Tools Reference Guide. We're not going to give away all the tricks in this Quick Start Guide—we just want you to have an idea of what's possible with Pro Tools LE.

To automate The Big Mute:

1 Go to the tutorial location by clicking "Big Mute" in the Memory Locations window.

2 Enable the Big Mute group by clicking in the column just left of "Big Mute" in the Groups list.



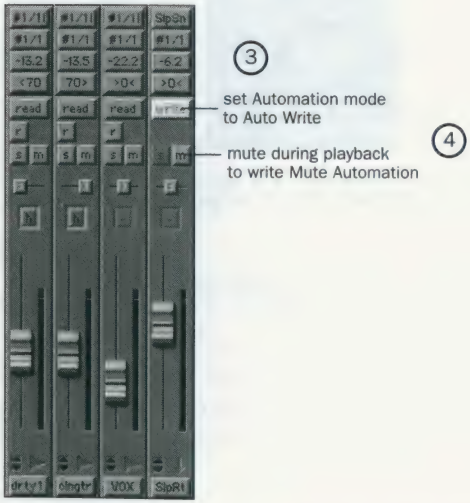
3 Set the Automation mode to Auto Write on the slap return track, called "SlpRt," by clicking the Automation mode button and selecting Auto Write from the pop-up. This will enable you to automate the muting of the slap return track, which puts a delay on the lead vocal.

4 Click Play in the Transport window, and click Mute on the track to begin writing mute automation.

5 Click Mute again to stop writing Mute Automation before the lead vocal begins the second part of the chorus (before *"but when she comes around"*).

6 Click Stop in the Transport window to stop writing automation.

The Automation mode automatically switches to "Auto Touch" after you stop playback. This Automation mode, which is used to "touch up" your recorded automation, is described in the Pro Tools Reference Guide.



7 Set the "SlpRt" track back to Auto Read, click Play in the Transport, and listen to the results. You should hear the chorus playing back without the delay on the vocals. Click Stop when you are done listening.

8 Set the Automation mode for the Big Mute group to Auto Write by clicking the Automation mode button on any of the tracks in the group (for example, cleangtr) and selecting Auto Write from the pop-up. Note how all of the tracks in the group go into Auto Write mode.

9 Play the session, and click the Mute button on any of the Auto Write enabled tracks in the Big Mute group (for example, "clngtr") to start writing mute automation to all tracks in the group. Try to click the Mute button at the beginning of measure 109 ("*she says when she* [mute] *comes around*") for greater impact.

10 Click the Mute button on the same track again to stop writing mute automation. Try to click the button around the beginning of measure 113 (*"but when she* [un-mute] *comes around"*).

11 Set the Big Mute group back to Auto Read mode, then click Play in the Transport window to hear the Big Mute.

Don't worry if you didn't get the mute just right the first time. You can choose Edit > Undo to erase the mute and try it again.

MIDI

This optional section is for MIDI users. In this section, you'll connect your MIDI device to the Digi 001 I/O Box, then we'll try to coax some meaningful sounds out of the MIDI tracks in the demo session.

MIDI configuration takes place in OMS (Open Music System) on the Macintosh, and in Windows Multimedia setup.

Macintosh

When you installed Digi 001, a Digi 001 driver was placed in your OMS folder. To use this driver, you need to connect your device, then configure your OMS Studio Setup. See "Installing and Configuring OMS" on page 9 for more information.

Windows

When you installed Digi 001, a Digi 001 MIDI driver was installed. To use this driver, you need to connect your device, then configure your Windows Multimedia Setup. See "Installing the Windows Wave Drivers" on page 19 for more information.

MIDI Offset

When you monitor a MIDI device through the Digi 001 audio inputs by record enabling tracks, you will hear an audio delay equivalent to the number of samples specified in your Hardware Buffer settings (see "Monitoring Latency and Recording" on page 69). This audio delay is called latency. You can counteract this latency by triggering your MIDI data early, using a feature called MIDI Offset. Refer to the *Pro Tools Reference Guide* for more details.

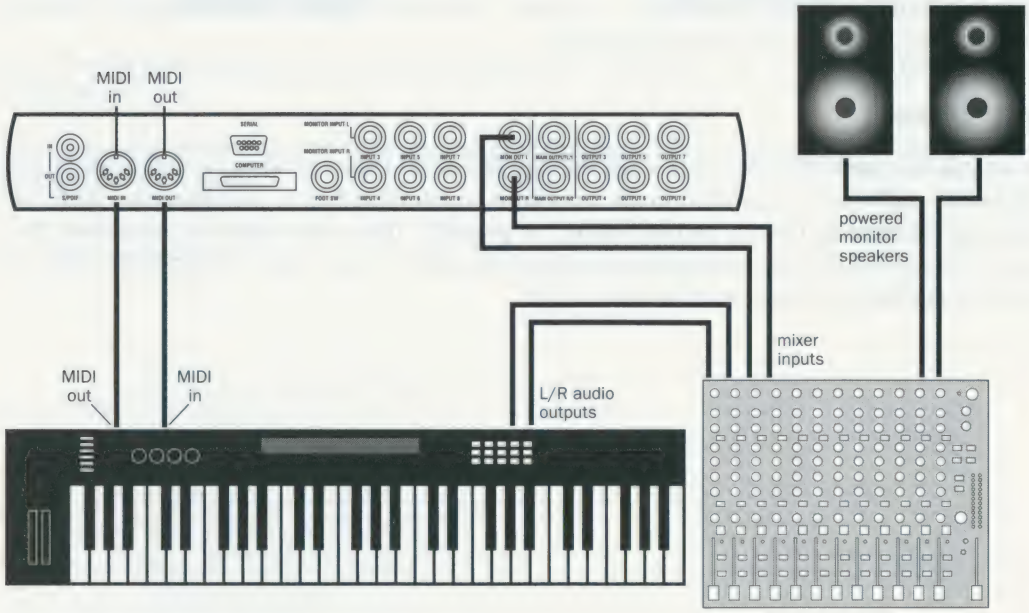
Connecting and Configuring a MIDI Device

To connect a MIDI device:

1 Using standard 5-pin MIDI cables, connect the MIDI In port on the Digi 001 I/O Box to the MIDI Out connector on your device, and connect the MIDI Out port on the Digi 001 I/O Box to the MIDI In port on your device.

2 Connect the audio output or outputs of your device.

- You can connect the audio output of the device to Digi 001 by connecting analog outputs to the analog inputs on the back of Digi 001 I/O Box, or you can connect a digital device to the proper digital inputs on either the Digi 001 I/O Box or the Digi 001 PCI Card.
  If you are monitoring your device through the audio inputs on Digi 001, you will have to route each input to a track and record enable that track to hear output (for instructions, see Chapter 6, "Recording").
- You can also monitor your device with a separate mixer that accepts analog or digital input, then route the output into the Digi 001 audio inputs when you are ready to record the audio. Read your mixer's documentation for more information.



Basic MIDI setup using an external hardware mixer

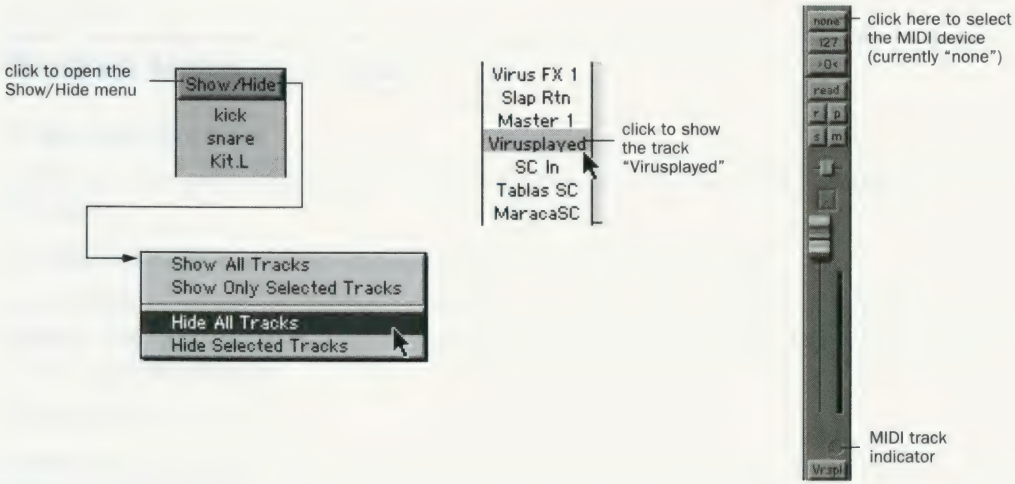
Using a MIDI Device with the Demo Session

To get an idea of how to assign a MIDI instrument to a track in Pro Tools LE, let's assign an instrument to a MIDI track that's already in the Demo session. We'll find and show the track "Virusplayed," then assign a MIDI device to it. Then we'll play back, and you can find suitable programs on your synth or other device to reproduce the MIDI track.

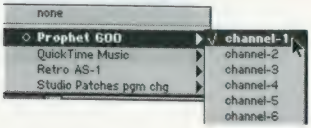
To assign a MIDI device to play back the track "Virusplayed":

1 Click the Memory Location "Tutorial Start" to go to the beginning of the tutorial.

2 Use the menu at the top of the Show/Hide Tracks List to Hide All Tracks. Then select only "Virusplayed" to be displayed, by clicking the track name.



3 Click on the MIDI Device/Channel Selector for the track and assign a device and channel from the pop-up menu.



4 Click Play in the Transport window to hear your MIDI device playing back the MIDI synth line recorded on the "Virusplayed" track.

Much more is possible with MIDI, Pro Tools LE, and Digi 001. See the *Pro Tools Reference Guide* for more information.

chapter 6

Recording

This section explains how to record audio and MIDI tracks using Pro Tools LE.

Routing Audio to a Track

To route audio to a track:

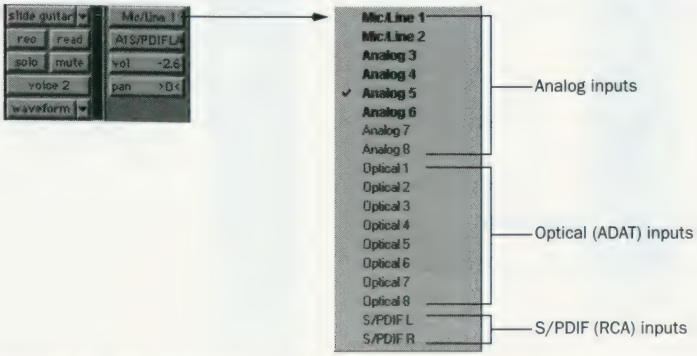
1 Connect your audio sources. See "Connecting Audio Sources to Digi 001" on page 32 for more information.

2 Create the tracks you want to record on by choosing File > New Track.

3 In the Edit or Mix window, find the I/O panel. You can show this panel if it is not visible by selecting Display > Edit Window Shows > I/O View for the Edit Window, or Display > Mix Window Shows > I/O View for the Mix Window.

4 Click the Input button.

5 From the pop-up menu, select the input you are using. For example, specify Mic/Line 1 if your audio source is plugged into analog input 1, or specify Optical 7 if you are using optical input 7.



Routing an input to a track

Setting Digi 001 Input Levels

Digi 001 input levels for analog inputs 1 and 2 are adjusted using the gain knobs on the Digi 001 I/O Box for each channel. Input levels for analog inputs 3–8 are software-adjustable to accommodate a variety of equipment output levels.

The key to setting input levels is to get a signal as loud as possible without creating digital clipping. Signals that get close to the top of the meter in Pro Tools LE use more of the full bit range (the 16 or 24 bits that make up each audio sample). The more you maximize this bit range, the better your sound quality. And, by setting optimum levels, you'll get the least possible noise and distortion.

But watch out for digital clipping. Clipping occurs when you feed a signal to an audio device that is louder than the circuitry can accept. The result is distortion. Digital clipping is harsh, and usually not something you want to hear at all, so watch those meters!

For best signal-to-noise performance, set the Digi 001 input gain to +4 dBu when recording devices that provide this output level.

To adjust gain on the Digi 001 (Mic/Line inputs 1–2):

1 Connect the instrument or microphone to the input.

2 If the microphone requires phantom power, apply phantom power now by pressing the 48V switch.

3 Create an Auxiliary Input track by choosing File > New Track.

4 Set the track input to the correct Digi 001 input channel (Mic/Line 1 or 2).

5 Play the instrument or sound source at the volume you will record.

6 Adjust the input gain for the channel using the gain knob on the front of the Digi 001 I/O Box. Increase or decrease gain until you are able to achieve maximum signal level without clipping. Typically such levels are in the yellow area of the track's meter.

increasing gain

To adjust input gain on the Digi 001 (Analog inputs 3–8):

1 Connect the instrument or device to the Digi 001 I/O Box.

2 In Pro Tools LE, choose Setups > Hardware.

3 Click Other Options.

4 Set the input trim slider to match the output level of the connected instrument. Refer to the manufacturer's documentation for details. If you do not know the output level of the device, use the default input trim level, then fine tune the input level gain using the procedure below.

5 Click Done then click OK.

Increasing gain raises the noise floor. Make sure that the device you have connected is outputting as strong a signal as possible without distortion, then set the input gain accordingly.

To fine tune the input level gain (Analog inputs 3–8):

1 Create an Auxiliary Input track by choosing File > New Track. This can be either mono or stereo depending on the device you are monitoring. Option-click (Macintosh) or Alt-Click (Windows) the fader on the track to set it to unity gain (0 dB).

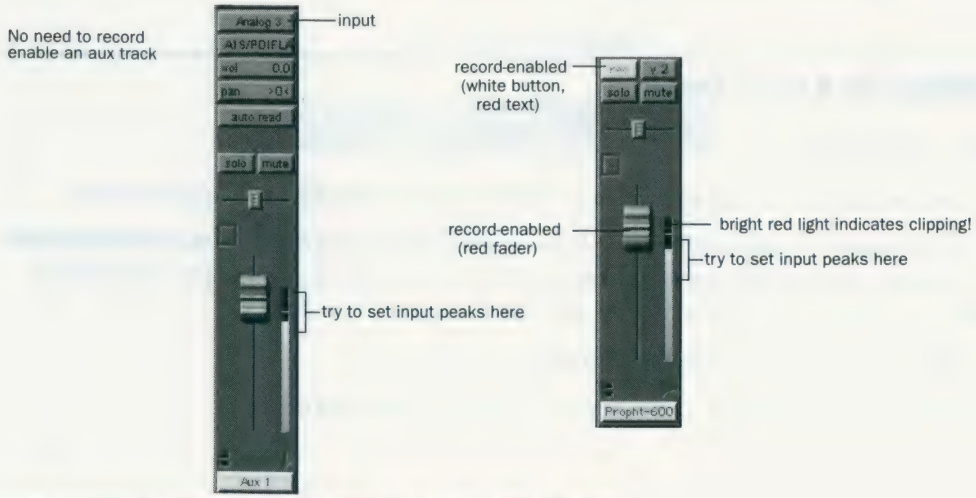
2 Set the track input to the correct Digi 001 input channels or channels.

3 Play the instrument at the volume you will record.

4 Note where the instrument output signal registers on the on-screen meters in Pro Tools LE. Good levels are in the yellow range of the Pro Tools LE track meters. If the levels hit the red, they are clipping, and you should lower the input gain.

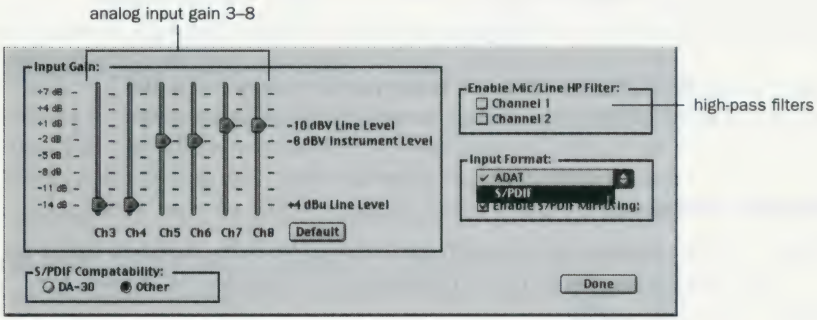
5 If the meters are not clipping, and they are not in the yellow range, choose Setups > Hardware, and click Other Options to increase the input gain by raising the volume slider for the appropriate input. Click Done and play the audio source again. Repeat until you have a strong signal without clipping.

6 Repeat this until you are able to achieve maximum signal level without clipping.



Setting recording input levels (Aux Track on left, Disk Track on right)

7 Adjust the gain on analog channels 3–8 by using Other Options in the Hardware Setup dialog (Setups > Hardware, then click Other Options).



Other Options dialog

NOTE: Gain cannot be adjusted for digital inputs, unless you can adjust it at the source.

Mic/Line High-Pass Filter

Digi 001 includes a high-pass filter set at 60 Hz. This filter can be useful for filtering out low-end rumble from a noisy recording environment or microphone handling, or AC noise.

To use the high-pass filter on analog input 1 or 2:

1 Choose Setups > Hardware, then click Other Options.

2 Enable the high-pass filter for the required inputs.

Recording an Audio Track

To record an audio track:

1 Record enable the desired track and assign an input to it. Set the input levels appropriately.

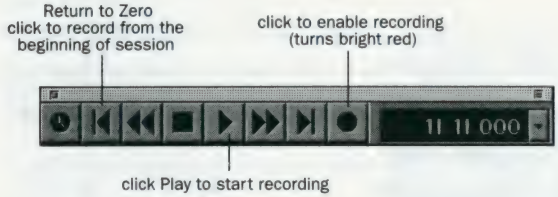
2 Display the Transport window (Windows > Show Transport) and click Return to Zero to ensure that you are starting from the beginning of the session. You can also record according to a selection or from the cursor location in the Edit window. (See the illustrations that follow.)

3 Click Record in the Transport window to enable recording.

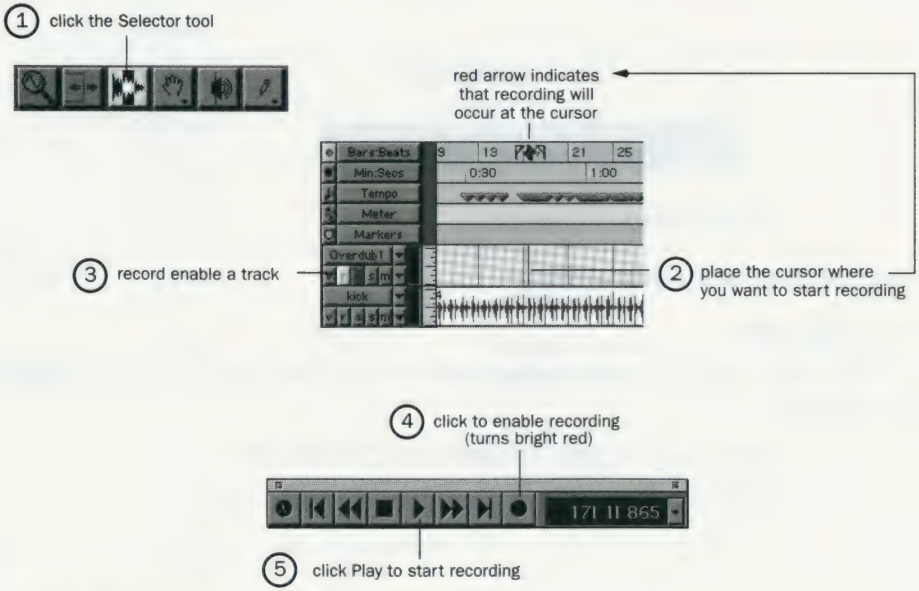
4 Click Play or press the Spacebar to record on all record-enabled tracks.

5 Start playing your instrument.

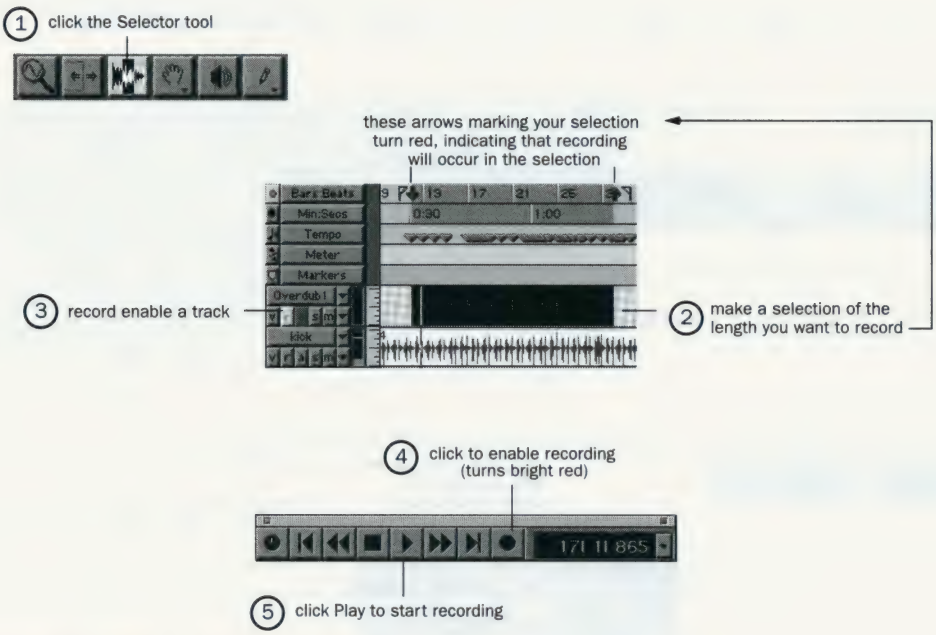
6 Click Stop in the Transport window or press the Spacebar when you are done recording.



Recording from the beginning of a session



Recording from the cursor location in the Edit window



Recording the length of a selection in the Edit window

To play back a recorded track:

1 Disable recording on the track by clicking the Record button for the track again. The button should no longer be highlighted.

2 Click Play in the Transport window or press the Spacebar to play the track.

3 Click Stop in the Transport window or press the Spacebar to stop playback.

Monitoring Latency and Recording

Because Pro Tools LE uses the host processor in your computer for audio processing, playback, and recording, there is a small amount of audio delay, or latency, when monitoring audio through the system. You can set the latency shorter when you are recording and monitoring through Digi 001, and longer when you are trying to achieve higher track counts with more plug-ins.

How Hardware Buffer settings affect audio monitoring latency

Sample rate	Buffer setting (samples)	Latency (ms)	Use this setting for:
44.1 kHz	128	2.9	recording drums and other timing-critical instruments
	256	5.8	recording vocals and instruments with slower attacks
	512	11.6	mixing with 24 tracks
	1024	23.2	final mixdown or many plug-ins
	2048	46.4	final mixdown or many plug-ins
	4096	92.8	final mixdown or many plug-ins
	8192	185.5	final mixdown or many plug-ins
48 kHz	128	2.7	recording drums and other timing-critical instruments
	256	5.3	recording vocals and instruments with slower attacks
	512	10.7	mixing with 24 tracks
	1024	21.3	final mixdown or many plug-ins
	2048	42.7	final mixdown or many plug-ins
	4096	85.3	final mixdown or many plug-ins
	8192	170.7	final mixdown or many plug-ins

Set latency in the Hardware Setup dialog box. Latency is controlled by the H/W Buffer Size setting, and is displayed in samples. The recommended setting for listening back to audio is 512–1024 samples. For recording, when monitoring through Digi 001, the recommended setting is 128–256 samples.

⚠ *If you have a SampleCell II Plus card, a buffer size of 128 should not be used when running the SampleCell Editor at the same time as Pro Tools LE. Use a larger buffer setting to avoid performance errors.*

To set the Hardware Buffer Size for record or playback:

1 Choose Setups > Hardware.

2 Choose the number of samples from the H/W Buffer Size pop-up, then click OK.

Low Latency Monitoring

Pro Tools LE includes a feature called Low Latency Monitoring for Digi 001 systems. This feature allows you to use a built-in mixer on the Digi 001 PCI card to record and monitor up to 16 inputs (8 analog and 8 ADAT) with extremely low latency. This mode can be very desirable for recording multiple instruments at the same time, or a band.

To enable Low Latency Monitoring:

- Select Operations > Low Latency Monitoring.

To use Low Latency Monitoring tracks must be record-enabled, assigned to an actual audio input (not a bus), and assigned to outputs 1 or 2.

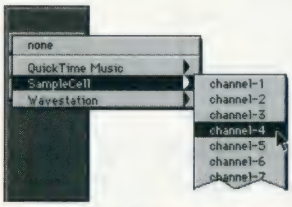
When Low Latency Monitoring is enabled, any plug-ins and sends assigned to record-enabled tracks (routed to Outputs 1–2) are automatically bypassed, and must remain bypassed. Also, these tracks will not register on meters for Master Faders.

Recording MIDI

To configure a new MIDI track for recording:

1 Choose File > New Track and specify 1 MIDI Track, then click Create.

2 In the Mix window, click on the track's MIDI Device/Channel Selector and assign a device and channel from the pop-up menu.



MIDI Device/Channel Selector

3 If you want, you can assign a default program change to the track. In the Mix window, click on the Program button (Prog) and make the necessary selections for program and bank select, then click Done. Default program changes are sent when playing a track.

4 In the Mix Window, click the MIDI track's Record button to record enable the track.

Monitoring MIDI Instruments Without a Mixer

If you are using your Digi 001 system without an external mixing console, you will need to create an Auxiliary Input to monitor your MIDI instrument. Auxiliary Inputs function as inputs for both internally bussed signals and external audio sources.

To configure an Auxiliary Input for MIDI monitoring:

1 Connect the MIDI instrument's output to the appropriate input of your Digi 001 I/O Box.

2 Choose File > New Track and specify 1 Aux Input track, then click Create.

3 Click the Input selector of the Auxiliary Input channel and choose the input to which your MIDI instrument is connected.

4 Click the Output selector of the Auxiliary Input channel and choose an output.

5 Adjust the level of the Auxiliary Input with its volume fader.

To record into the new MIDI track:

1 Choose MIDI >Input Devices and make sure the MIDI device is selected.

2 Make sure MIDI > MIDI Thru is selected, then play some notes on your MIDI controller. The MIDI instrument assigned to the track should sound, and the track's meters should register MIDI activity.

3 In the Transport window, click Return to Zero so the start and end times are cleared. This ensures that you'll start recording from the beginning of the track.

4 Click Record in the Transport window.

- If using Wait for Note, the Play, Record, and Wait for Note buttons flash. Recording begins when the first MIDI event is received.
- If using Countoff, click Play. The Record and Play buttons flash during the Countoff—after which, recording begins.

5 When you have finished recording, click Stop in the Transport window. The newly recorded MIDI data appears as a MIDI region in the Edit window, and in the MIDI Regions List.

To play back the recorded MIDI track:

1 Click the Record Enable button on the MIDI track to take it out of record-ready mode.

2 In the Transport window, click Return to Zero.

3 Click Play in the Transport window to begin playback. The recorded MIDI data plays back through the track's assigned instrument and channel.

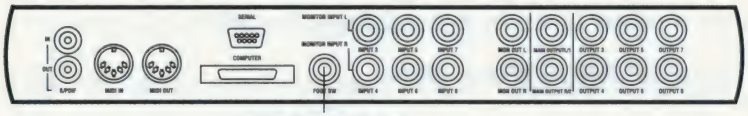
Recording with a Footswitch

You can use a standard footswitch (for example, a synth sustain pedal) with QuickPunch to "punch in" when recording audio. You can also punch in when recording MIDI, without enabling QuickPunch. For details on Punch recording, see the *Pro Tools Reference Guide*.

Pro Tools LE only detects the footswitch if you connect it to the Digi 001 I/O Box before you launch Pro Tools LE.

To connect a footswitch to Digi 001:

- Plug a footswitch into the Footswitch connector on the back of the Digi 001 I/O Box.



To punch in when recording audio with QuickPunch:

1 Enable QuickPunch (Operations > QuickPunch).

2 Set input routing and click the Record button on each audio track you want to punch in. You can punch in on up to 8 audio tracks while playing 24 tracks, or you can punch in on up to 16 tracks while playing 16 tracks.

3 Click Play in the Transport window. Press the footswitch to begin recording (punch in) on all record-enabled tracks. Press the footswitch again to stop recording (punch out).

Note that the session continues to play, and you can continue to punch in and out as many times as you want with the footswitch.

To punch in when recording MIDI:

1 Set your MIDI input routing and click the Record button on each MIDI track you want to punch in. QuickPunch is not required to punch in on MIDI tracks.

2 Click Play in the Transport window. Press the footswitch to begin recording (punch in) on all record-enabled tracks. Press the footswitch again to stop recording (punch out).

Recording to and from an ADAT

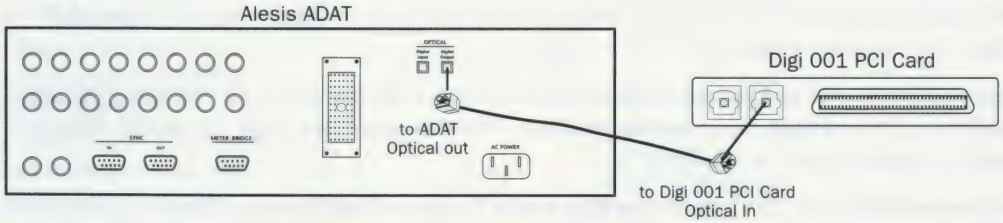
You can use Digi 001 to interface with an ADAT, either to record tracks from an ADAT into Pro Tools LE for editing, or to record tracks from Pro Tools LE to an ADAT.

Using Output Pairs

Because of the way that outputs function in Pro Tools LE, each track looks for a stereo output pair. This means that in order to record to eight ADAT tracks, you have to send 4 pairs of Pro Tools LE tracks (each pair panned hard left and right) to Digi 001's 4 pairs of ADAT Optical Digital outputs.

To record ADAT tracks into Pro Tools LE:

1 Connect the Optical Out connector from your ADAT deck to the Optical In connector on the back of the Digi 001 PCI Card.



Connecting ADAT optical output to the Digi 001 PCI Card optical input

2 Open or create a session in Pro Tools LE.

3 Record enable up to 8 audio tracks (depending on how many tracks are used on the ADAT tape).

4 Assign ADAT Optical Inputs 1–8 to your eight tracks.

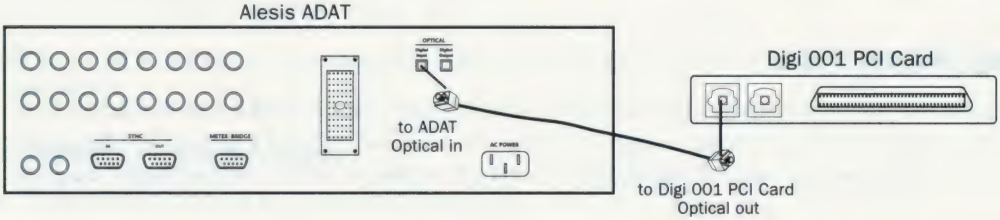
5 Click Record in the Transport window.

6 Click Play in the Transport window to begin recording, then press Play on the ADAT.

7 When playback from the ADAT tape is finished, click Stop in the Transport window, or press the Spacebar.

To record Pro Tools LE tracks to an ADAT:

1 Connect the ADAT Optical Out connector on the back of the Digi 001 PCI Card to the ADAT Optical In connector on the back of the ADAT deck.



2 Open the session you want to record to the ADAT.

3 Record enable up to 8 audio tracks on the ADAT.

4 Pan 4 pairs of tracks so that each pair is panned hard stereo (one track of each pair is panned all the way left, and the other is panned all the way right).

5 Route each track pair to a separate Optical output pair by selecting from the Output pop-up menu for each track. For example, if one of your pairs was 3(L)–4(R), you could route this pair to the output labeled #1/9 Optical 1-#1/10 Optical 2.

6 Start recording on the ADAT, then click Play in the Transport window in Pro Tools LE. When playback is complete, stop both systems.

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